

2016 DATA SUMMARY REPORT

Ballard, Enoch Valley, and Henry Mines Remedial Investigation Activities

DRAFT
Revision 0
January 2017
prepared for
P4 PRODUCTION, LLC



2016 DATA SUMMARY REPORT

BALLARD, ENOCH VALLEY, AND HENRY MINES REMEDIAL INVESTIGATION ACTIVITIES

LONG-TERM GROUNDWATER AND SURFACE WATER MONITORING

DRAFT

Revision 0

JANUARY 2017

Prepared by:



Prepared for:

P4 PRODUCTION, LLC

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ACRONYMS AND ABBREVIATIONS

AOC Administrative Order of Consent

A/Ts Agencies and Tribes

BLM Bureau of Land Management BRA Baseline Risk Assessment

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CO Consent Order

COPC constituents of potential concern

COPEC constituents of potential ecological concern

CVS calibration verification standards

DOI Department of the Interior DSR Data Summary Report

FSP field sampling plan

HASP health and safety plan

ICAL initial calibration

ICV initial calibration verification

IDEQ Idaho Department of Environmental Quality

IS Internal standard

LCD laboratory control duplicate
LCS laboratory control sample
LDC Laboratory Data Consultants

LTM long-term monitoring

MWH Americas, Inc.

MS/MSD matrix spike/matrix spike duplicate

P4 Production L.L.C.

QAPP Quality Assurance Project Plan

QC quality control

RI/FS Remedial Investigation/Feasibility Study

RLs reporting limits

SAP Sampling and Analysis Plan

SOW Statement of Work

SOP Standard Operating Procedure

ACRONYMS AND ABBREVIATIONS CONTINUED

Tribes The Shoshone-Bannock Tribes

USEPA United States Environmental Protection Agency

USFS United States Forest Service

1.0 INTRODUCTION

This 2016 Data Summary Report (DSR) was prepared by MWH Americas, Inc. (MWH) on behalf of P4 Production, LLC (P4), in accordance with the requirements of the Administrative Settlement Agreement and Order on Consent/Consent Order for Remedial Investigation/Feasibility Study (2009 CO/AOC; USEPA, 2009). The 2009 CO/AOC is a voluntary agreement between P4 and the United States Environmental Protection Agency (USEPA), the Idaho Department of Environmental Quality (IDEQ), the United States Department of Agriculture, United States Forest Service (USFS), the United States Department of the Interior (DOI), United States Bureau of Land Management (BLM), and the Shoshone-Bannock Tribes (Tribes). Collectively, the cooperating agencies are referred to as the Agencies and Tribes (A/Ts). The 2016 DSR supports the comprehensive minespecific Remedial Investigation/Feasibility Studies (RI/FS) that are being conducted at each of P4's three historic phosphate mines: Ballard Mine, Henry Mine, and Enoch Valley Mine, collectively known as the "Sites".

This 2016 DSR documents the most recent spring and fall groundwater and surface water sampling rounds conducted as part of the long-term monitoring (LTM) at the Sites and includes descriptions of the field activities and summarizes the results from those sampling efforts. **Figure 1-1** - P4 Mines Vicinity Map depicts the footprint of each Site and its geographic relationship with the other Sites.

1.1 Report Description and Objectives

This report is intended to fulfill the requirements for reporting data consistent with a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) RI and Task 3c of the Statement of Work (SOW) attached to the 2009 CO/AOC. Consistent with the SOW, the 2016 DSR documents the investigative activities that were conducted during the 2016 field season and provides a summary of collected data. Complete data packages and field forms are provided as appendices to the DSR. Data are presented herein with little to no interpretation as the combined data sets for each Site have been, or will be, evaluated in the individual Ballard, Henry, and Enoch Valley Mines RI and FS Reports. The purpose and objectives of the 2016 RI/FS monitoring activities are further discussed below.

1.1.1 2016 Surface Water and Groundwater Sampling

Based on the A/Ts' request made during the review of the *Proposed P4 Long-Term Surface Water and Groundwater Monitoring Plan Memo - Final Rev 1*; (MWH, 2014a), a comprehensive LTM sampling and analysis plan (SAP) was prepared in early 2015 for the Sites' surface and groundwater monitoring activities. The revised SAP entitled *Sampling and Analysis Plan for Long-Term Monitoring of Surface Water and Groundwater Ballard, Henry, and Enoch Valley Mines – Final Revision 1 (2015 LTM SAP;* MWH, 2015) was submitted to the A/Ts for final approval on April 10, 2015. The *2015 LTM SAP* includes a Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP), and Health and Safety Plan (HASP), and is a stand-alone document that guides the surface water and groundwater

LTM program for the Sites through the next five year period, unless superseded by another document. The objectives, methods, and procedures for surface water and groundwater sampling conducted in 2016 (and reported herein) are described in the 2015 LTM SAP and were followed for the two 2016 sampling events.

In addition to fulfilling objectives established in the 2015 LTM SAP, the 2016 surface water monitoring event included collection of two additional surface water samples from ponds located on the Ballard Mine Site as further described in Section 2.0. The collection of these additional samples were a one-time collection event, pending results, and currently are not part of the LTM program.

1.2 Report Organization

The content of this DSR is as follows:

- Section 1.0 Introduction
- Section 2.0 Summary of 2016 Field Activities
- Section 3.0 Summary of 2016 Analytical Results by Mine Site
- Section 4.0 References

2.0 SUMMARY 2016 FIELD ACTIVITIES

This section discusses the surface water and groundwater sampling program at the Sites and data collection activities during the 2016 field events. Further evaluation of the data is reserved for the individual Site RI and FS Reports and not presented herein. The RI Report for the Ballard Mine entitled *Ballard Mine Remedial Investigation Report*, *Final Revision 2* (*Final Ballard RI Report*; MWH, 2014b) is complete and used data that were collected through 2012. The RI Report for the Henry Mine (*Draft Henry RI Report*; MWH, 2016), currently under review, uses data that were collected through 2014. Therefore, future data collected from the Ballard and Henry Sites, including the 2016 presented herein, will be used as baseline data until the selected remedy for these Sites is in place and the trends of data collected pre- and post-remediation can be compared. The 2016 data collected at the Enoch Valley Site will be included in its RI Report because its preparation has not begun.

A summary of analyte exceedances from the spring and fall sampling rounds is organized by individual Site and is provided in Section 3.0. All field activity forms (including field sampling forms, chains of custody, sampling field note book copies, sampling parameter measurements, and any other relevant field data) are provided in **Appendix A**.

2.1 2016 Surface Water and Groundwater Sampling Activities

Surface water and groundwater sampling was conducted during the spring and fall of 2016 as described in the 2015 LTM SAP. The surface water and groundwater sample locations for the Ballard Mine, Enoch Valley Mine, and Henry Mine sites are depicted on **Figure 2-1**, **Figure 2-2**, and **Figure 2-3**, respectively.

Spring Sampling. Surface water and groundwater samples were collected from sampling locations at each Site between May 9 and 16, 2016, including the following numbers for each Site:

- Ballard Site: 17 surface water and 22 groundwater samples
- Enoch Valley Site: 10 surface water and 14 groundwater samples (one surface water location [MST269] and three groundwater locations [MBW107, MBW112, and MMW012] were dry)
- Henry Site: seven surface water and five groundwater samples (one surface water location [MST051] and one groundwater location [MBW152] were dry)

Fall Sampling. In accordance with rationale set forth in the 2015 LTM SAP, surface water samples were collected at each Site, on September 27, 2016, in the following numbers at each mine site:

Ballard Site: four surface water samples (one surface water location [MSG004] was dry). In addition, two additional surface water locations were sampled as shown (in purple) on Figure 2-1 (described in Section 2.2. below).

- Enoch Valley Site: three surface water samples (two surface water locations [MDS025 and MST144] were dry)
- Henry Mine: three surface water samples (one surface water location [MDS034] was dry)

Spring and fall surface water samples were collected using the protocols outlined in SOP-NW-9.1, Collection of Surface Water Samples. Surface water flow measurements were collected according to the methods presented in SOP-NW-9.2a, Surface Water Flow Measurements Using Man-Made Portable Devices or Estimation Techniques. Both of these Standard Operating Procedures (SOPs) are included in the 2015 LTM SAP.

Spring groundwater samples were collected using the protocols outlined in SOP-NW-5.3, Collection of Groundwater Quality Samples and the SOP, Low Stress Purging and Sampling Procedures for the Collection of Groundwater Samples from Monitoring Wells. Both of these SOPs are included in the 2015 LTM SAP.

As described in the 2015 LTM SAP, the LTM program for groundwater does not include fall sampling. Therefore, no groundwater samples were collected during the Fall 2016 sampling round. Summaries of surface water and groundwater constituents of potential concern/constituents of potential ecological concern (COPC/COPEC) exceedances based on the appropriate regulatory standards for the 2016 program are provided in Sections 3.1 and 3.2.

2.2 2016 Surface Water and Groundwater Program Changes from 2015

Two additional surface water samples were collected during the 2016 fall sampling round from two ponds on the Ballard Mine Site (SEPond and NWPond, refer to **Figure 2-1**). These samples were collected, as requested by the A/T in an email dated September 12, 2016, to address a potential data gap along Wooley Valley Creek in the reach between MST093 and MST092. Collection of these surface water samples was a one-time collection event, and currently they are not part of the LTM program. Further discussion of these results is provided Section 3.4.

2.3 Work Plan Deviations

There were no deviations from the 2015 LTM SAP for the spring or fall 2016 sampling events.

3.0 SUMMARY OF 2016 ANALYTICAL RESULTS BY MINE SITE

This section presents the exceedances of COPC/COPEC screening levels in the results from analyses of surface water and groundwater samples collected during the 2016 field activities. The screening levels included in this DSR are derived from promulgated federal and state chemical-specific primary and secondary standards. Evaluation of the COPCs/COPECs has been or will be evaluated in greater detail in the exposure scenarios presented in the Baseline Risk Assessments (BRAs) prepared for each Site. The BRAs evaluate and determine the risks posed by individual constituents and combined constituent exposures. The comprehensive results for all 2016 analytical data presented herein, as well as a copy of the screening levels in **Table B-2**, are provided in **Appendix B**.

3.1 Surface Water Sampling – 2016 Analytical Results

Table 3-1 (Ballard Site), **Table 3-2** (Enoch Valley Site) and **Table 3-3** (Henry Site) present the exceedances of screening levels in surface water for the 2016 spring and fall events. The comprehensive results for all 2016 surface water constituents are provided in **Appendix B**.

3.2 Groundwater Sampling – 2016 Analytical Results

Table 3-4 (Ballard Site), **Table 3-5** (Enoch Valley Site) and **Table 3-6** (Henry Site) present the exceedances of screening levels by Site in groundwater for the 2016 spring event. The comprehensive results for all 2016 groundwater constituents are provided in **Appendix B**.

3.3 Third Party Data Validation

Third party data validation was performed on all laboratory analyses from the 2016 field program. Data validation is the process of evaluating the quality control (QC) parameters against the criteria established in the QAPP and qualifying those data points where the QC criteria is outside the established criteria. Level III data validation evaluates the following QC parameters:

- QAPP compliance
- Sample preservation and extraction and analytical holding times
- Method, trip, diffusion bag, and equipment rinseate blank sample results
- Reporting limits (RLs)
- Field duplicate sample results
- Tune standard results
- Initial calibration (ICAL), initial calibration verification (ICV), and continuing calibration verification standards (CVS) results

- Surrogate spike recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) sample results
- Laboratory control sample (LCS) and laboratory control duplicate (LCD) results
- Internal standard (IS) results.

In addition to the Level III data validation process, Level IV validation was conducted for 10 percent of the data in accordance with the QAPP. The following data review was conducted as part of the Level IV validation:

- Review of raw data from the instrument (i.e., chromatograms, quantitation reports, spectra)
- Back check of all calculations
- Review of sample preparation and analytical logs

A qualitative assessment also was conducted to evaluate whether the validated data were of sufficient quality to support the project objective (i.e., end use). All of the Level III and IV data validation reports prepared by Laboratory Data Consultants (LDC) showed that the overall assessment of the data was found to be acceptable. The complete validation reports from LDC are included as **Appendix** C.

3.4 Conclusions

This DSR presents data collected in 2016 to address LTM of surface water and groundwater at the Sites. No additional potential data gaps were discovered based on the 2016 data. However, two additional surface water locations were sampled at the Ballard Site to fulfill a data gap along Wooley Valley Creek.

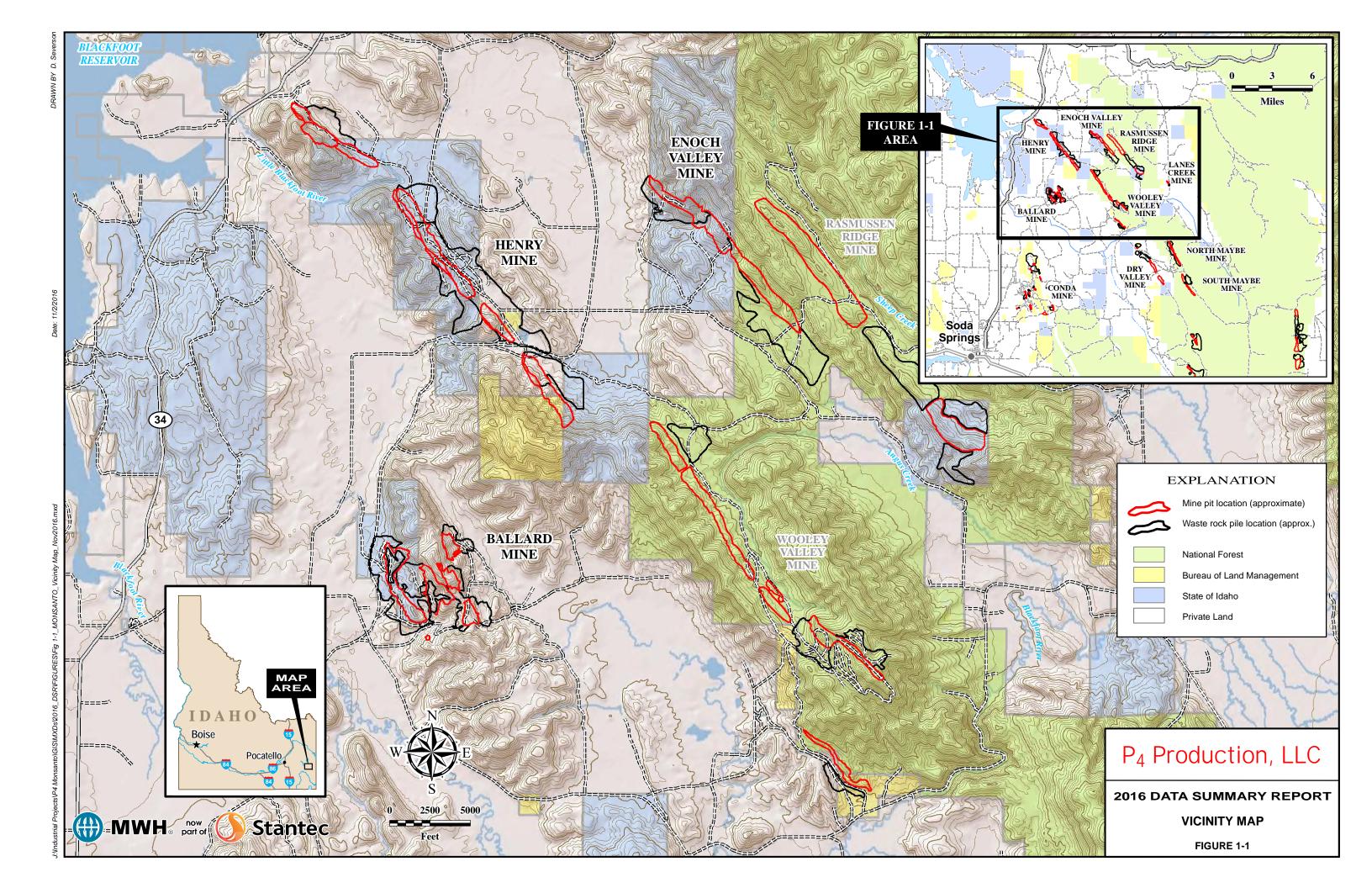
Based on the fall 2016 surface water sample results, it is proposed that the new SEPond sample location be re-named MSP063 and be resampled in spring 2017. The NWPond sample was collected in the pond near background station MST093 (which is at the inlet to the pond), and based on the sample result, this location also represents background conditions. As a result, P4 will not rename or re-sample this background pond location in 2017. However, these two new 2016 pond locations at the Ballard Site (and their data) will be incorporated into the text and alternative figures in the draft final and final versions of Ballard Site FS Memorandum #2 – Screening, Detailed, and Comparative Analysis of Assembled Remedial Alternatives that will be issued in 2017.

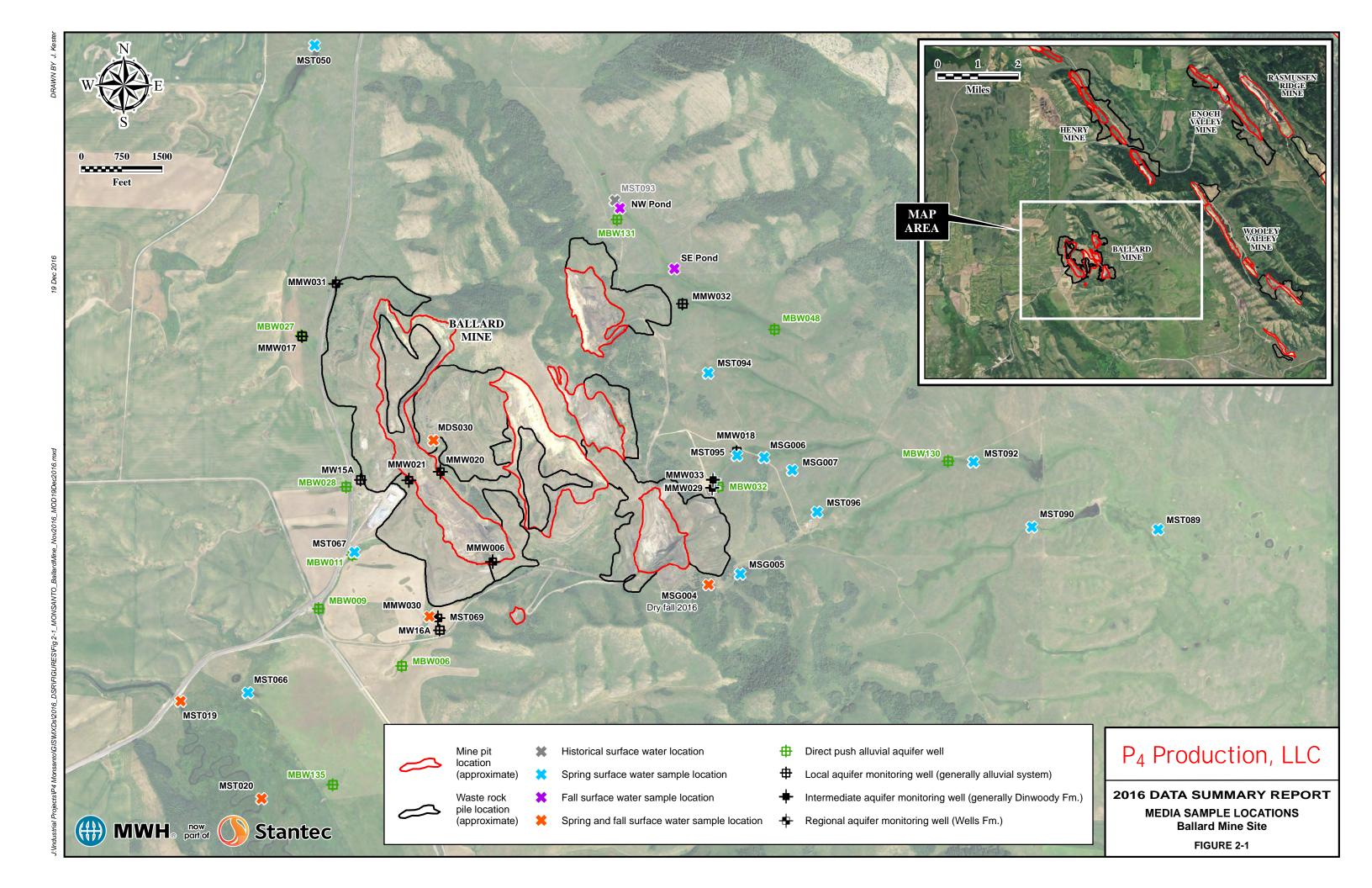
The surface water and groundwater data presented in this DSR will eventually be combined with other Site characterization data to complete the evaluation of conceptual models, source areas, pathways, and receptors in the RI Report prepared for the Enoch Valley Site and during preparation of the upcoming feasibility studies for the Henry and Enoch Valley Sites.

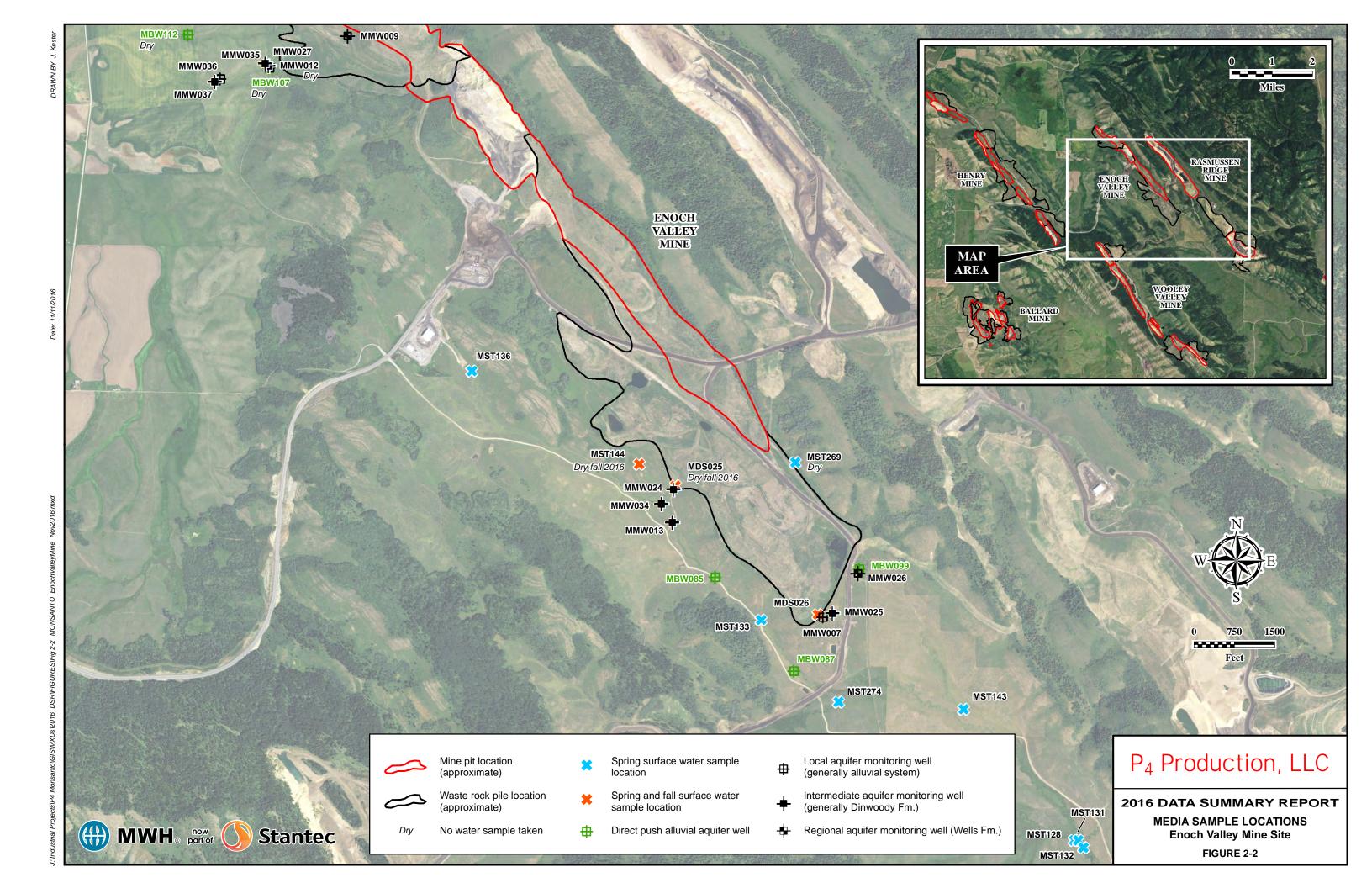
4.0 REFERENCES

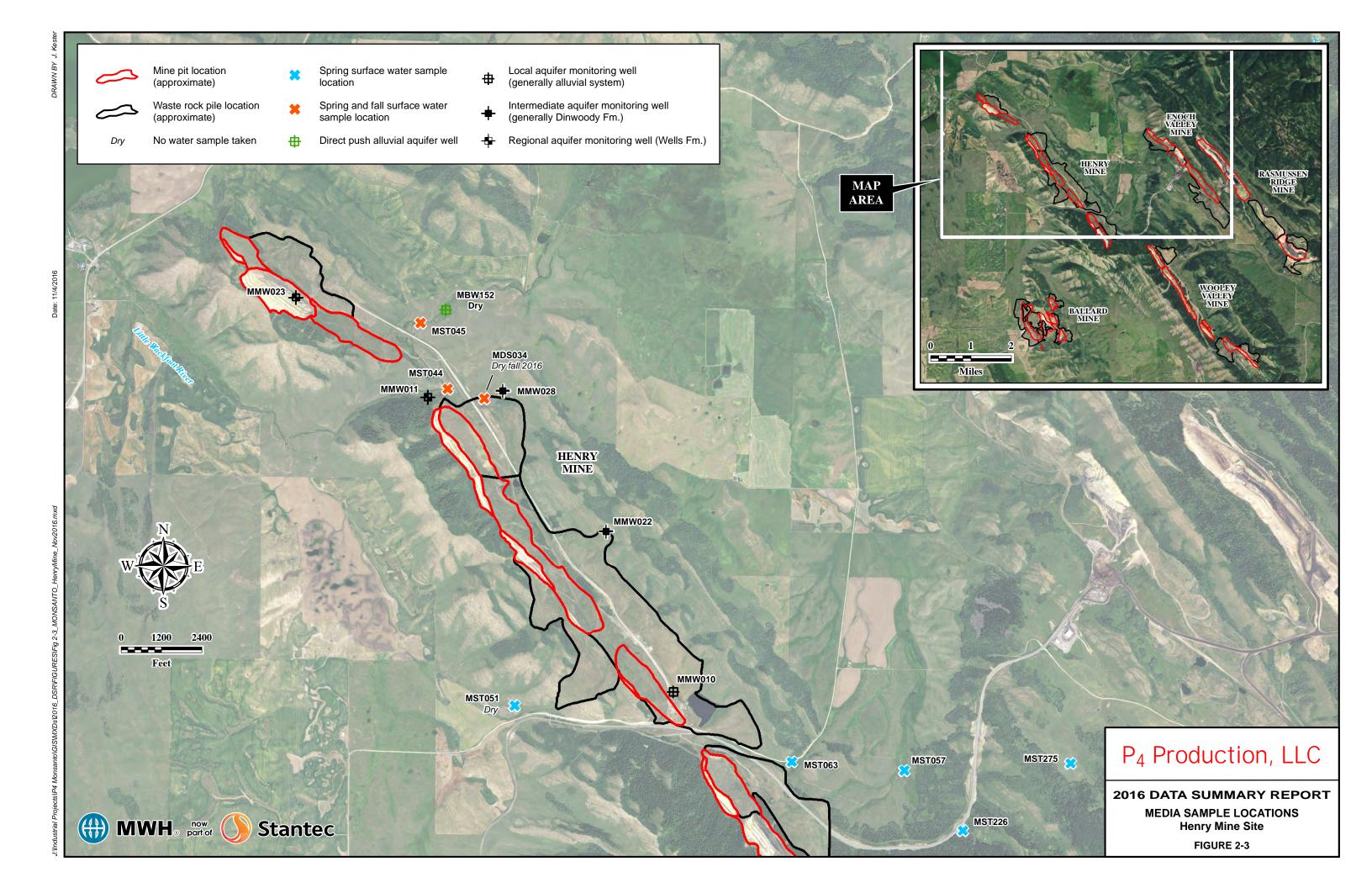
- MWH, 2009a. 2009 and 2010 Surface Water Monitoring Sampling and Analysis Plan Final Revision 2, prepared for P4 Production L.L.C., May 2009.
- MWH, 2009b. 2009 Groundwater Monitoring Sampling and Analysis Plan Final Revision 3, prepared for P4 Production L.L.C., August 2009.
- MWH, 2010. 2010 Groundwater Monitoring Memorandum Final Revision 2, prepared for P4 Production L.L.C., May 2010.
- MWH, 2011. 2011 Remedial Investigation/Feasibility Study Work Plan for P4's Ballard, Henry and Enoch Valley Mines Final Revision 2, prepared for P4 Production L.L.C., May 2011.
- MWH, 2012. 2012 Surface and Groundwater Monitoring Programs Final Rev 2, prepared for P4 Production L.L.C., May 2012.
- MWH, 2014a. Proposed P4 Long-Term Surface Water and Groundwater Monitoring Plan Final Rev 1, prepared for P4 Production L.L.C., April 2014.
- MWH, 2014b. Remedial Investigation Report for P4's Ballard Mine Final Revision 2, prepared for P4 Production L.L.C., November 2014.
- MWH, 2015a. Sampling and Analysis Plan for Long-Term Surface Water and Groundwater Ballard, Henry, and Enoch Valley Mines Final Revision 1, prepared for P4 Production L.L.C., April 2015.
- MWH, 2015b. Ballard Mine Feasibility Study Report Memorandum 1 Site Background and Screening of Technologies Draft Revision 0, prepared for P4 Production L.L.C., March 2015.
- MWH, 2016. Remedial Investigation Report for P4's Henry Mine Draft Revision 1, prepared for P4 Production L.L.C., August 2016.
- USEPA, 2009. Administrative Settlement Agreement and Order on Consent/Consent Order for Performance of Remedial Investigation and Feasibility Study at the Enoch, Henry, and Ballard Mine Sites in Southeastern Idaho. United States Environmental Protection Agency, U.S. EPA Region 10, Idaho Department of Environmental Quality, United States Department of Agriculture, Forest Service Region 4, United States Department of the Interior, Bureau of Land Management, Shoshone-Bannock Tribes, in the Matter of Enoch Valley Mine, Henry Mine, Ballard Mine, P4 Production, L.L.C., Respondent. Effective Date of November 30, 2009.











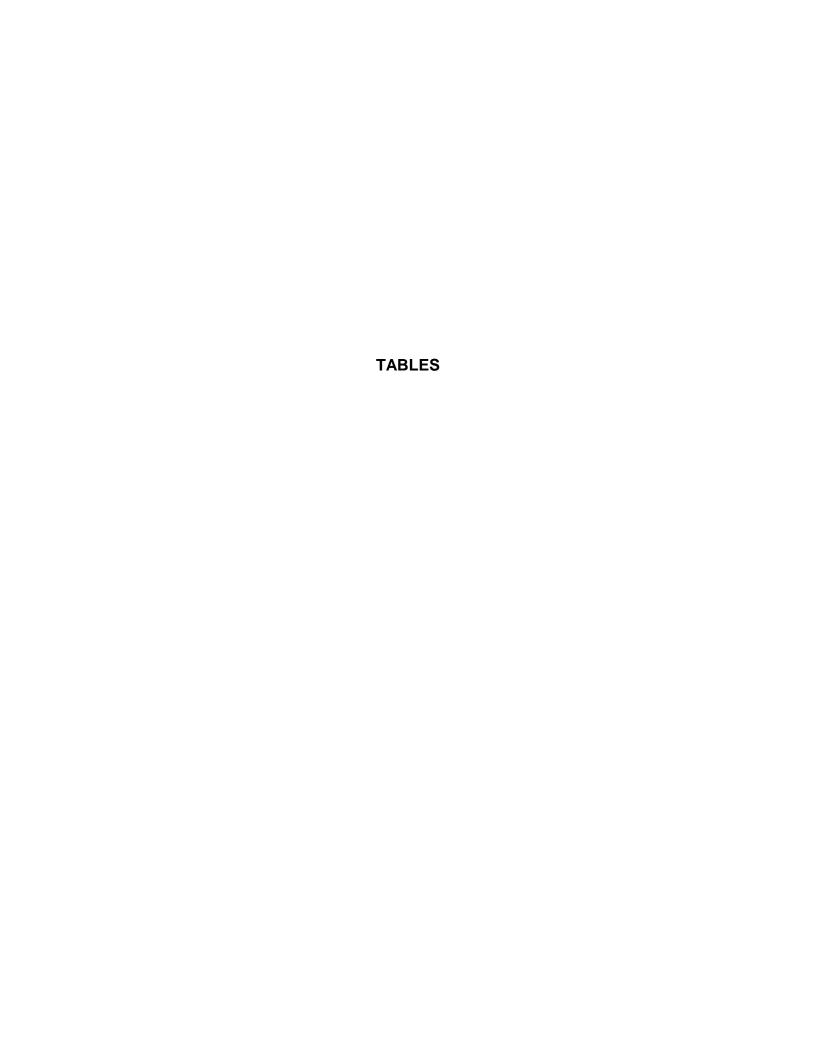


TABLE 3-1
SUMMARY OF 2016 SURFACE WATER RESULT EXCEEDANCES - BALLARD MINE P4 RI/FS

(Page 1 of 7)

Loca	tion Identification Location Type Date Collected	MDS Sec 5/10/2	ep	MDS03 Sec 5/10/	ер	MDS03 Sec 5/10/	ер	MDS Sec 9/27/2	ep
Analyte (Units)									
	Screening Levels								
Metals (mg/L)	Levels	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	< 0.00008		< 0.00008		<0.00008		<.00008	
Selenium	0.0031 mg/L	0.772 D	0.756 D	0.78 D	0.772 D	0.776 D	0.764 D	1.02 D	1.01 DJ

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.

TABLE 3-1
SUMMARY OF 2016 SURFACE WATER RESULT EXCEEDANCES - BALLARD MINE P4 RI/FS

(Page 2 of 7)

Loca Analyte (Units)	tion Identification Location Type Date Collected	MSG Spri 5/10/2	ng	MSG Spri 5/10/2	ing	MSG Sprii 5/11/2	ng	MSG Spr 5/11/2	ing
	Screening Levels								
Metals (mg/L) Cadmium	0.0006 mg/L	<u>Dissolved</u> 0.00004 FJ	<u>Total</u> 	<u>Dissolved</u> <0.0008	<u>Total</u> 	Dissolved 0.00002 FJ	<u>Total</u>	<u>Dissolved</u> <0.0008	<u>Total</u>
Selenium	0.0031 mg/L	0.0209	0.0217	0.0052	0.0057	0.279	0.286	0.0139	0.0495

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.

TABLE 3-1

(Page 3 of 7)

Locat	tion Identification Location Type Date Collected	MST(Strea 5/9/20	ım	MST Stre 9/27/	eam	MST01 Stre 9/27/	eam	MST01 Stre 9/27/	am
Analyte (Units)									
	Screening								
	Levels								
Metals (mg/L)		Dissolved	Total	Dissolved	<u>Total</u>	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	0.000048 FJ		<.00008		<.00008		<.00008	
Selenium	0.0031 mg/L	0.0057	0.0068	0.0018	0.0018 J	0.0017	0.0019 J	0.00175	.00185 J

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.

TABLE 3-1

(Page 4 of 7)

Loca	tion Identification Location Type Date Collected	MST(Strea 5/11/2	ım	MST Stre 9/27/	am	MST Strea 5/9/2	am	MST(Strea 5/11/2	ım
Analyte (Units)	Screening								
	Levels								
Metals (mg/L)		Dissolved	<u>Total</u>	Dissolved	<u>Total</u>	Dissolved	<u>Total</u>	Dissolved	<u>Total</u>
Cadmium	0.0006 mg/L	0.000014 FJ		<.00008		0.000052 FJ		0.000015 FJ	
Selenium	0.0031 mg/L	0.0053	0.0057	0.0016	0.0017 J	0.00055	0.00075	0.0332	0.0339

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.

TABLE 3-1

(Page 5 of 7)

Loca	tion Identification Location Type Date Collected	MST Stre 5/11/2	am	MST Stre 5/11/2	am	MST Stre 9/27/	am	MST0 Strea 5/10/2	am
Analyte (Units)									
	Screening								
	Levels								
Metals (mg/L)		Dissolved	Total	Dissolved	<u>Total</u>	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	0.0011		0.0017		0.00099		0.000028 FJ	
Selenium	0.0031 mg/L	0.461 D	0.447 D	1.49 D	1.59 D	1.35 D	1.32 DJ	0.0053	0.0056

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.

TABLE 3-1

(Page 6 of 7)

Loca Analyte (Units)	tion Identification Location Type Date Collected	Str	T090 eam /2016	MST0 Strea 5/10/2	am	MST Stre 5/10/2	am	MST Stre 5/11/2	am
	Screening Levels								
Metals (mg/L)		Dissolved	<u>Total</u>	Dissolved	<u>Total</u>	Dissolved	<u>Total</u>	Dissolved	Total
Cadmium	0.0006 mg/L	< 0.00008		0.000045 FJ		0.000018 FJ		0.0003	
Selenium	0.0031 mg/L	< 0.0005	0.00026 FJ	0.013	0.0136	0.0008	0.00082	0.0864	0.0859

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.

TABLE 3-1

(Page 7 of 7)

Loca	tion Identification Location Type Date Collected	MST Stre 5/10/2	am	NWP Por 9/27/2	nd	SEPO Por 9/27/2	nd
Analyte (Units)							
	Screening Levels						
Metals (mg/L)	<u> </u>	Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	< 0.00008		<.00008		0.00011	
Selenium	0.0031 mg/L	0.0609	0.0668	0.00057	0.0011 J	0.0068	0.0111 J

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.

TABLE 3-2
SUMMARY OF 2016 SURFACE WATER RESULT EXCEEDANCES - ENOCH VALLEY MINE
P4 RI/FS
(Page 1 of 4)

Loca Analyte (Units)	tion Identification Location Type Date Collected	MDS See 5/13/2	ep	MDS Sec 9/27/2	ep	MDS Sec 5/13/2	ep	MST Stre 5/13/2	eam
	Screening Levels								
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	0.00076		0.0011		0.001		< 0.00008	
Selenium	0.0031 mg/L	0.174	0.177	0.0198	0.088 J	0.019	0.0786	0.00093	0.00091

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-2
SUMMARY OF 2016 SURFACE WATER RESULT EXCEEDANCES - ENOCH VALLEY MINE
P4 RI/FS
(Page 2 of 4)

	ion Identification Location Type Date Collected	Strea	m	MST1 Strea 5/13/2	ım	MST13 Stre 5/13/2	am	MST13 Stre 5/13/2	am
Analyte (Units)	Screening								
Metals (mg/L) Cadmium	0.0006 mg/L	Dissolved 0.000019 UBF	<u>Total</u> 	<u>Dissolved</u> 0.00003 UBF	<u>Total</u> 	Dissolved <0.00008	<u>Total</u> 	<u>Dissolved</u> 0.00003 UB	<u>Total</u>

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-2
SUMMARY OF 2016 SURFACE WATER RESULT EXCEEDANCES - ENOCH VALLEY MINE
P4 RI/FS
(Page 3 of 4)

Locat Analyte (Units)	ion Identification Location Type Date Collected	Strea	m	MST1 Strea 5/12/20	m	MST Stre 5/13/	eam	MST1 Strea 5/13/20	m
	Screening Levels								
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	0.000025 UBF		0.000061 UBF		0.000087 J+		0.000065 UBF	
Selenium	0.0031 mg/L	0.0049	0.0051	0.0012	0.0015	0.0002 FJ	0.00023 FJ	0.365	0.359

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-2

(Page 4 of 4)

Lo	cation Identification Location Type Date Collected	Strea	m
Analyte (Units)			
	Screening Levels		
Metals (mg/L)	Levels	Dissolved	Total
Cadmium	0.0006 mg/L	0.000016 UBF	
Selenium	0.0031 mg/L	0.0033	0.0032

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-3

(Page 1 of 3)

Location Identification Location Type Date Collected Analyte (Units)		MDS034		MST044		MST044		MST045	
		Seep		Stream		Stream		Stream	
		5/12/2016		5/12/2016		9/27/2016		5/12/2016	
Metals (mg/L) Selenium	Screening Levels 0.0031 mg/L	Dissolved 0.0313	Total 0.0338	Dissolved 0.0004 FJ	<u>Total</u> 0.00049 UBF	Dissolved 0.00063	<u>Total</u> 0.00066 J	Dissolved 0.00059 J+	<u>Total</u> 0.00056 J+

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

Screening Levels are derived from promulgated federal and state chemical-specific primary and secondary standards.

D Sample dilution required for analysis; reported values reflect the dilution.

F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.

J Data are estimated due to associated quality control data.

UB Analyte considered not detected based on associated blank data.

TABLE 3-3

(Page 2 of 3)

Locati Analyte (Units)	ion Identification Location Type Date Collected	Str	945 Dup ream 9/2016	Str	045 Avg eam /2016	Str	F045 eam /2016	Str	T057 eam /2016
Metals (mg/L) Selenium	Screening Levels 0.0031 mg/L	<u>Dissolved</u> 0.00054 J+	<u>Total</u> 0.00048 UBF	<u>Dissolved</u> 0.000565 J+	<u>Total</u> 0.00052 UBF	<u>Dissolved</u> 0.00073	<u>Total</u> 0.00069 J	Dissolved 0.00024 FJ	<u>Total</u> 0.00021 FJ

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

Screening Levels are derived from promulgated federal and state chemical-specific primary and secondary standards.

D Sample dilution required for analysis; reported values reflect the dilution.

F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.

J Data are estimated due to associated quality control data.

UB Analyte considered not detected based on associated blank data.

TABLE 3-3

(Page 3 of 3)

Locat Analyte (Units)	ion Identification Location Type Date Collected	MST Stre 5/11/2	am	MST Stree 5/12/2	am	Stı	T275 ream 2/2016
Metals (mg/L) Selenium	Screening Levels 0.0031 mg/L	Dissolved 0.0208	<u>Total</u> 0.0282	Dissolved 0.0042	<u>Total</u> 0.004	Dissolved <0.0005	<u>Total</u> 0.00023 UBF

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

Screening Levels are derived from promulgated federal and state chemical-specific primary and secondary standards.

D Sample dilution required for analysis; reported values reflect the dilution.

F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.

J Data are estimated due to associated quality control data.

UB Analyte considered not detected based on associated blank data.

TABLE 3-4
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - BALLARD MINE
P4 RI/FS
(Page 1 of 8)

Analyte (Units)	Location Identification Location Type Date Collected	ocation Type Bore Hole Well		Bore H	W009 (ole Well /2016	MBW011 Bore Hole Well 5/15/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		0.0000027 UBF		$0.0\overline{0011} \text{ J}+$		$0.0\overline{0013} J+$
Manganese	0.05 mg/L		0.0075		0.137		0.008
Selenium	0.05 mg/L	0.405	0.363	0.0027	0.0029	0.452 D	0.662 D
Chemistry Paramet	ters (mg/L)						
Sulfate (as SO ₄)	250 mg/L	391 DJ-		349 DJ-		307 DJ-	
Total dissolved s	solids 500 mg/L		796		717		751

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-4
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - BALLARD MINE
P4 RI/FS
(Page 2 of 8)

Lo Analyte (Units)	ocation Identification Location Type Date Collected	ion Type Bore Hole Well		Bore H	W028 ole Well /2016	MBW032 Bore Hole Well 5/11/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		0.00024		0.00026		0.00083
Manganese	0.05 mg/L		0.00064		0.0405		0.0009
Selenium	0.05 mg/L	0.257	0.239	0.72 D	0.761 D	1.55 D	1.56 D
Chemistry Paramete	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	188 DJ-		459 DJ-		1160 DJ-	
Total dissolved so	olids 500 mg/L		564		976		1900

Bold Bolded result indicates positively identified compound.

Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-4
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - BALLARD MINE
P4 RI/FS
(Page 3 of 8)

L Analyte (Units)	ocation Identification Location Type Date Collected	MBW032 Dup Bore Hole Well 5/11/2016		Bore H	032 Avg ole Well /2016	MBW048 Bore Hole Well 5/14/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		0.0008		$0.\overline{000815}$		0.00014
Manganese	0.05 mg/L		0.0014		0.00115		0.346
Selenium	0.05 mg/L	1.57 D	1.58 D	1.56 D	1.57 D	< 0.0005	< 0.0005
Chemistry Paramet	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	1030 DJ-		1095 DJ-		5.4 J-	
Total dissolved s	olids 500 mg/L		1890		1895		130

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-4
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - BALLARD MINE
P4 RI/FS
(Page 4 of 8)

L Analyte (Units)	ocation Identification Location Type Date Collected	MBW130 Bore Hole Well 5/15/2016		MBV Bore Ho 5/14/	ole Well	MBW135 Bore Hole Well 5/14/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		0.00046		0.00014		0.000028 UBF
Manganese	0.05 mg/L		0.127		0.0014		0.141
Selenium	0.05 mg/L	0.00026 FJ	0.00039 FJ	0.0016	0.002	< 0.0005	< 0.0005
Chemistry Paramete	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	10.7 J-		2.9 J-		51.0 J-	
Total dissolved s	olids 500 mg/L		145		111		267

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-4
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - BALLARD MINE
P4 RI/FS
(Page 5 of 8)

L Analyte (Units)	ocation Identification Location Type Date Collected	Monitor	W006 ring Well /2016	MMW017 Monitoring Well 5/11/2016		MMW018 Monitoring Well 5/11/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		< 0.00008		0.00045		< 0.00008
Manganese	0.05 mg/L		0.00015 FJ		0.0028		0.023
Selenium	0.05 mg/L	0.151	0.157	0.156	0.155	0.0297	0.0302
Chemistry Paramet	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	90.4 J-		520 DJ-		46.4 J-	
Total dissolved s	olids 500 mg/L		332		1090		264

Bold Bolded result indicates positively identified compound.

Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-4
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - BALLARD MINE
P4 RI/FS
(Page 6 of 8)

L Analyte (Units)	ocation Identification Location Type Date Collected	Monitor	W020 ing Well /2016	MMW021 Monitoring Well 5/10/2016		MMW029 Monitoring Well 5/11/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		0.0069		0.00 0061 UBF		< 0.00008
Manganese	0.05 mg/L		0.0478		< 0.0005		0.00058
Selenium	0.05 mg/L	0.0664	0.0653	0.0544	0.0556	0.634 D	0.626 D
Chemistry Paramete	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	203 DJ-		48.7 J-		642 DJ-	
Total dissolved se	olids 500 mg/L		626		358		1280

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-4
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - BALLARD MINE
P4 RI/FS
(Page 7 of 8)

I Analyte (Units)	ocation Identification Location Type Date Collected	Monitor	W030 ring Well /2016	MMW031 Monitoring Well 5/13/2016		MMW032 Monitoring Well 5/15/2016	
j.c (C	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		< 0.00008		< 0.00008		0.00017
Manganese	0.05 mg/L		0.0211		0.00015 FJ		0.0016
Selenium	0.05 mg/L	< 0.0005	< 0.0005	0.00088	0.00093	0.002	0.002
Chemistry Paramet	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	15.0 J-		2.9 J-		5.6 J-	
Total dissolved s	•		229		167		224

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-4
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - BALLARD MINE
P4 RI/FS
(Page 8 of 8)

L Analyte (Units)	ocation Identification Location Type Date Collected	Monito	MMW033 Monitoring Well 5/11/2016		MW15A Monitoring Well 5/15/2016		V16A ring Well //2016
	Screening Levels						
Metals (mg/L)	-	Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		0.000013 UBF		$0.\overline{0002}$ 2		<0.00008
Manganese	0.05 mg/L		0.0443		0.00018 FJ		1.81 D
Selenium	0.05 mg/L	0.00018 FJ	0.00014 FJ	1.04 D	1.09 D	0.0088	0.0082
Chemistry Paramet	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	28.2 J-		619 D		783 DJ-	
Total dissolved s	•		267		1340		1370

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-5 $\label{table 3-5} \mbox{SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - ENOCH MINE } \\ \mbox{P4 RI/FS} \\ \mbox{(Page 1 of 6)}$

Analyte (Units)	Location Identification Sample Type Date Collected	MBW085 Bore Hole Well 5/14/2016		MBW087 Bore Hole Well 5/14/2016		MBW099 Bore Hole Well 5/14/2016	
Metals (mg/L)	Screening Levels	Dissolved	Total	Dissolved	Total	Dissolved	Total
Manganese	0.05 mg/L		0.0043		0.0459		0.004
Selenium	0.05 mg/L	0.0011	0.0011	0.00022 FJ	0.00024 FJ	0.00038 FJ	0.00015 FJ
Chemistry Paramet	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	22.3 J-		23.8 J-		39.1 J-	
Total dissolved s	solids 500 mg/L		215		331		215

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-5
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - ENOCH MINE
P4 RI/FS
(Page 2 of 6)

Lo Analyte (Units)	ocation Identification Sample Type Date Collected	MMW007 Monitoring Well 5/13/2016		MMW009 Monitoring Well 5/13/2016		MMW013 Monitoring Well 5/14/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	<u>Total</u>	Dissolved	<u>Total</u>
Manganese	0.05 mg/L		0.059		0.0668		0.0177
Selenium	0.05 mg/L	0.0017	0.0015	< 0.0005	< 0.0005	0.178	0.17
Chemistry Parameter	rs (mg/L)						
Sulfate (as SO ₄)	250 mg/L	14.8 J-		60.7 J-		159 DJ-	
Total dissolved so	lids 500 mg/L		158		393		467

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-5
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - ENOCH MINE
P4 RI/FS
(Page 3 of 6)

Analyte (Units)	Location Identification Sample Type Date Collected	Monito	W024 ring Well //2016	MMW025 Monitoring Well 5/14/2016		MMW026 Monitoring Well 5/10/2016	
Metals (mg/L) Manganese Selenium	Screening Levels 0.05 mg/L 0.05 mg/L	<u>Dissolved</u> 0.0613	<u>Total</u> 0.00016 FJ 0.0574	<u>Dissolved</u> 0.00059	<u>Total</u> 0.0024 0.00053	<u>Dissolved</u> 0.0013	<u>Total</u> 0.00053 0.0013
Chemistry Parameter Sulfate (as SO ₄) Total dissolved s	ers (mg/L) 250 mg/L	340 DJ- 	 781	11.0 J- 	 171	25.2 J- 	 243

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-5
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - ENOCH MINE
P4 RI/FS
(Page 4 of 6)

Analyte (Units)	Location Identification Sample Type Date Collected	Monitor	W027 ring Well /2016	MMW034 Monitoring Well 5/14/2016		MMW034 Dup Monitoring Well 5/14/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Manganese	0.05 mg/L		0.00089		0.00033 FJ		0.0002 FJ
Selenium	0.05 mg/L	0.689 D	0.759 D	0.0857	0.0888	0.0886	0.0838
Chemistry Paramet	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	334 DJ-		132 DJ-		133 DJ-	
Total dissolved s	solids 500 mg/L		840		390		370

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-5
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - ENOCH MINE
P4 RI/FS
(Page 5 of 6)

I Analyte (Units)	Location Identification Sample Type Date Collected	Monito	oring Well Monito		W035 ring Well /2016	MMW036 Monitoring Well 5/13/2016	
Metals (mg/L)	Screening Levels	<u>Dissolved</u>	<u>Total</u>	<u>Dissolved</u>	<u>Total</u>	<u>Dissolved</u>	<u>Total</u>
Manganese Selenium	0.05 mg/L 0.05 mg/L	0.08715	0.000265 FJ 0.0863	 1.16 D	0.0016 1.15 D	0.0194	0.0018 0.0199
Chemistry Paramete	ers (mg/L)						
Sulfate (as SO ₄) Total dissolved se	250 mg/L olids 500 mg/L	132.5 DJ- 	 380	498 DJ- 	 1160	22.9 J- 	246

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-5
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - ENOCH MINE
P4 RI/FS
(Page 6 of 6)

Lo Analyte (Units)	ocation Identification Sample Type Date Collected	MMW037 Monitoring Well 5/13/2016		MMW037 Dup Monitoring Well 5/13/2016		MMW037 Avg Monitoring Well 5/13/2016		
	Screening Levels							
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	
Manganese	0.05 mg/L		0.0021		0.0023		0.0022	
Selenium	0.05 mg/L	0.0306	0.0282	0.0304	0.0288	0.0305	0.0285	
	_							
Chemistry Parameter	rs (mg/L)							
Sulfate (as SO ₄)	250 mg/L	31.0 J-		31.0 J-		31 J-		
Total dissolved so	lids 500 mg/L		260		254		257	

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-6
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - HENRY MINE
P4 RI/FS
(Page 1 of 3)

L Analyte (Units)	ocation Identification Location Type Date Collected	Monitor	W010 ring Well /2016	MMW011 Monitoring Well 5/12/2016		MMW022 Monitoring Well 5/12/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	<u>Total</u>	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		0.0058		0.0007		0.00058
Manganese	0.05 mg/L		0.0123		0.00027 UBF		0.193
Selenium	0.05 mg/L	0.127	0.118	0.0005 UBF	0.00041 UBF	0.0478	0.0446
Chemistry Paramete	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	735 DJ-		136 DJ-		273 DJ-	
Total dissolved so	olids 500 mg/L		1520 J-		532 J-		683 J-

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-6
SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - HENRY MINE
P4 RI/FS
(Page 2 of 3)

Analyte (Units)	Location Identification Location Type Date Collected	MMW023 Monitoring Well 5/12/2016		MMW028 Monitoring Well 5/12/2016		MMW028 Dup Monitoring Well 5/12/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		$0.0\overline{00043} \text{ FJ}$		$0.0\overline{00013}$ FJ		0.0000023 UBF
Manganese	0.05 mg/L		0.308		< 0.0005		< 0.0005
Selenium	0.05 mg/L	0.00018 UBF	< 0.0005	0.005	0.0036	0.0046	0.0037
Chemistry Paramet	ers (mg/L)						
Sulfate (as SO ₄)	250 mg/L	221 DJ-		68.7 J-		68.5 J-	
Total dissolved s	olids 500 mg/L		670 J-		349 J-		349 J-

Bold Bolded result indicates positively identified compound.

Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE 3-6

SUMMARY OF 2016 GROUNDWATER RESULT EXCEEDANCES - HENRY MINE P4 RI/FS

(Page 3 of 3)

	Location Identification Location Type Date Collected	Monito	7028 Avg ring Well 2/2016
Analyte (Units)			
	Screening		
	Levels		
Metals (mg/L)		Dissolved	Total
Cadmium	0.005 mg/L		0.000018 UBF
Manganese	0.05 mg/L		< 0.0005
Selenium	0.05 mg/L	0.0048	0.00365
Chemistry Parame	eters (mg/L)		
Sulfate (as SO ₄)) 250 mg/L	68.6 J-	
Total dissolved	solids 500 mg/L		349 J-

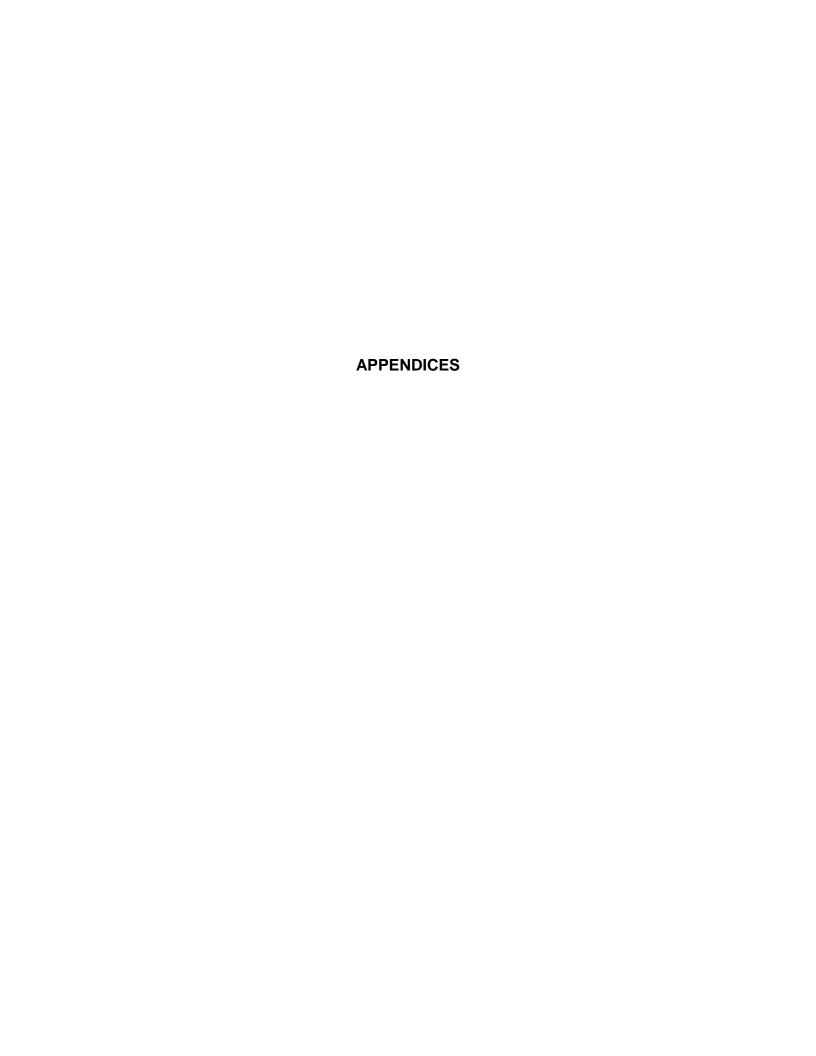
mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

Shaded Shade indicates result exceeded Screening Level.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.



APPENDIX A – FIELD NOTES AND FIELD FORMS

A-1 2016 Spring Groundwater and Surface Water Sampling
A-2 2016 Fall Surface Water Sampling



TABLE A-1 2016 SPRING SURFACE WATER FIELD PARAMETERS P4 MONSANTO, IDAHO

(Page 1 of 2)

Matrix	Station ID	Water Temp (deg. C)	Spec Cond (uS/cm) @ 25 deg. C	Cond (uS/cm)	D.O. (% sat.)	D.O. (mg/L)	рН	ORP (mV)	Turbidity (NTU)	Air Temp (deg. c)	Discharge (cfs)	Comments	Date	Time
SW	MDS025	11	1333	977	53.3	5.74	7.06	28.2	12.4	10	N/A	Flow coming from several locations along seep on the hill side. Can not measure.	5/13/2016	1455
SW	MDS026	9.9	1869	1331	48.1	5.3	7.01	56.2	17.7	10	N/A	Flow coming from several locations along seep, approximately 30 feet wide. Can not measure.	5/13/206	1550
SW	MDS030	8.1	944	640	64.5	7.31	7.47	92.6	0.29	1.7	0.01	Seep coming out of hill side beneath tree. Surrounded by waste rock	5/10/2016	930
SW	MDS034	17.5	1040	891	36.7	3.46	7.54	23	0.55	11.7	0.00	Dump seep coming out of hill side (waste pile) pooling in meadow	5/12/2016	1245
SW	MSG004	8.8	648.6	447.3	105.5	11.92	8.12	17.6	3.92	1.7	N/A	8 foot wide seep, unable to collect flow. Daylighting in multiple locations across the hill.	5/10/2016	1510
SW	MSG005	7.1	675.5	444.5	72	8.45	7.95	18.6	0.19	1.7	0.04	water coming out of piped spring into cattle trough water collected directly from pipe	5/10/2016	1545
SW	MSG006	7.2	1708	1125	65.9	7.91	7.5	12.8	0.9	6.1	N/A	Flow can not be measured. Daylights on hill side and flow through grassy area intermittently. Approx. 30ft wide seep across hill side.	5/11/2016	1020
SW	MSG007	6.3	634.3	408.2	27.8	3.4	8	5.6	0.7	6.1	N/A	Spring flow can not be measured. Daylights at toe of hill in an area approximately 20ft wide. Hummocky.	5/11/2016	1000
SW	MST019	12.5	329.7	251.3	94	8	7.48	107.7	13.5	11.7	418.00	Flow from USGS station online, staff gauge submerged.	5/9/2016	1505
SW	MST020	11	374.7	274.6	87.8	9.71	8.34	54.9	12.8	15	392.00	No flow collected, river running too high to enter safely.	5/11/2016	1330
SW	MST044	13.5	699	545	95.7	9.98	8.17	38.6	1.33	11.7	12.75		5/12/2016	1205
SW	MST045	11.6	693	515	89	9.62	8.02	38.7	1.08	11.7	10.37		5/12/2016	1100
SW	MST050	16.1	280.9	233	103.2	8.1	7.99	131.9	3.02	9.4	0.22	stream flow north of catchment pond	5/9/2016	1750
SW	MST051							DRY					5/12/2016	1355
SW	MST057	16.7	412.8	347.2	73	7.1	8.04	11.5	0.98	10.6	N/A	Flow too low to measure in marshy area.	5/11/2016	1715
SW	MST063	12.6	649.5	495.5	3.8	0.43	7.6	-19.7	14.2	10.6	N/A	No channelized flow, large marshy area.	5/11/2016	1620
SW	MST066	18.1	581	504	111.3	10.54	8.33	27.5	1.87	6.1	0.06	stream flowing through grassy ravine with tussocks	5/11/2016	1420
SW	MST067	8.3	2354	1602	60.8	7.5	8.1	42	7.22	6.1	0.02	small stream cutting through grassy field	5/11/2016	1530
SW	MST069	10.4	1563	1129	72.3	8.03	7.51	44.7	0.36	6.1	0.02	stream with shallow rock bottom coming out of the toe of waste rock pile	5/11/2016	1215
SW	MST089	8.9	456.6	316.3	88.3	10.21	7.88	17.2	1.19	1.7	0.03	meandering stream cutting through grassy meadows	5/10/2016	1218

TABLE A-1 2016 SPRING SURFACE WATER FIELD PARAMETERS P4 MONSANTO, IDAHO

(Page 2 of 2)

Matrix	Station ID	Water Temp (deg. C)	Spec Cond (uS/cm) @ 25 deg. C	Cond (uS/cm)	D.O. (% sat.)	D.O. (mg/L)	рН	ORP (mV)	Turbidity (NTU)	Air Temp (deg. c)	Discharge (cfs)	Comments	Date	Time
SW	MST090	9.4	394	276.9	84.6	9.52	7.91	16.3	0.55	1.7	1.13	meandering stream through grassy field; grass in stream	5/10/2016	1345
SW	MST092	7.3	564.1	373.4	59.8	7.15	7.62	-74	1.38	1.7	0.19	meandering stream through grassy field; grass in stream; lots of cow manure	5/10/2016	1100
SW	MST094	11	330	241.6	74.3	8.05	7.84	20	0.65	1.7	0.04	stream flowing through culvert sample taken above culvert	5/10/2016	1627
SW	MST095	11.8	945	707	77	8.15	7.88	17.7	0.39	1.7	0.13	small stream with thick grass and lots of cow manure.	5/11/2016	1120
SW	MST096	13.2	664	514	108.7	11.29	8.38	10.8	2.28	1.7	0.04		5/10/2016	1600
SW	MST128	9.7	446	315.6	81.8	9.15	8	41.3	4.5	10	8.41		5/10/2016	1020
SW	MST131	7.5	399.3	266	80.4	9.55	7.99	46.7	10.1	10	1.53		5/13/2016	945
SW	MST132	7.8	309	205.8	79.5	9.33	7.85	55	5.91	10	6.18		5/13/2016	915
SW	MST133	18.6	299.9	263.3	84.5	7.77	7.88	26.5	16.2	10	1.65		5/13/2016	1325
SW	MST136	18.3	391.6	343.3	42.7	3.9	7.49	29.4	6.59	16.1	N/A	No flow swampy area	5/12/2016	1445
SW	MST143	11.3	139.6	103	76	8.31	7.6	41.8	18.4	10	0.005		5/13/2016	1135
SW	MST144	11.1	791	581	57	6.18	7.58	42.7	13.4	10	0.02		5/13/2016	1425
SW	MST226	7.4	353.4	235.2	80.6	9.44	7.26	58.4	2.64	17.2	0.10		5/12/2016	1650
SW	MST269							DRY					5/13/2016	1530
SW	MST274	12.3	554.3	419.6	86.4	9.14	7.91	29.1	7.48	10	0.49		5/13/2016	1215
SW	MST275	21.6	109.9	102.9	78	6.77	7.55	43.6	45.5	13.9	0.02		5/12/2016	1555

cubic feet per second cfs deg. C degrees Celsius grams per liter g/L

millivolts

mg/l

mV

NTU N/A SW uS/cm milligrams per liter % sat.

Nephelometric Turbidity Units Parameter not required / not collected

Surface Water

microSiemens per centimeter

percent saturation

TABLE A-2 2016 SPRING GROUNDWATER FIELD PARAMETERS P4 MONSANTO, IDAHO

(Page 1 of 2)

Matrix	Station ID	Elevation MP (ft-AMSL)	Static Water Level (ft BMP)	Elevation Static Water (ft-AMSL)	Purge Rate (L/min)	Cumulative Purge Vol. (L)	Water Temp (deg. C)	рН	ORP (mV)	D.O. (mg/L)	Spec Cond (uS/cm) @ 25 deg. C	Turbidity (NTU)	Sampling Device	Comments	Date	Time
GW	MBW006	6319.31	2.33	6311.46	0.25	5.25	6.68	7.17	7.17	163.9	1081	0.3	Peristaltic	low flow	5/15/2016	1430
GW	MBW009	6310.69	3.7	6306.72	0.12	3.60	7.5	6.75	6.75	60.4	1043	0.55	Peristaltic	low flow	5/15/2015	1340
GW	MBW011	6339.8	3	6336.78	0.90	4.40	5.7	6.95	6.95	82.1	784.6	4.17	Peristaltic	purge and sample	5/15/2016	1230
GW	MBW027	6313.33	6.3	6301.96	0.20	2.70	5.9	7.26	7.26	73.5	903	1.36	Peristaltic	low flow	5/15/2016	1025
GW	MBW028	6339.99	3.9	6331.64	N/A	N/A	6.6	6.76	6.76	78.2	1334	11.5	Peristaltic	purge and sample	5/15/2016	1130
GW	MBW032	6499.13	7.37	6487.28	0.25	4.25	4.72	7.12	7.12	135.5	2087	0	Peristaltic	low flow	5/11/2016	1500
GW	MBW048	6421.72	1.1	6421.02	0.09	7.80	5.8	6.59	6.59	4.8	194.7	2.96	Peristaltic	low flow	5/14/2016	1613
GW	MBW085	6639.57	8.5	6637.7	0.50	19.50	5	6.86	6.86	64.7	369.1	3.16	Peristaltic	purge and sample	5/14/2016	1307
GW	MBW087	6587.3	1.6	6586.11	0.13	8.55	5.9	6.75	6.75	56.3	584.5	9	Peristaltic	low flow	5/14/2016	1145
GW	MBW099	6599.25	7.2	6598.2	0.50	3.75	9.39	7.02	7.02	166.5	308	2.3	Peristaltic	purge and sample	5/14/2016	1311
GW	MBW107	6486.78						SEE FIE	ELD NOTES						5/13/2016	930
GW	MBW112	6404						:	DRY						5/13/2016	1147
GW	MBW130	6416.29	3.5	6413.26	0.40	10.15	6	7.77	7.77	63.1	212.9	63.7	Peristaltic	purge dry and sample	5/15/2016	850
GW	MBW131	6468.52	1.5	6465.14	0.07	5.90	6.2	6.5	6.5	71.8	166.5	4.25	Peristaltic	low flow	5/14/2016	1755
GW	MBW135	6290.56	1.6	6287.4	N/A	N/A	6.7	7.04	7.04	63	449.3	4.11	Peristaltic	purge dry and sample	5/14/2016	1840
GW	MBW152	6280						:	DRY						5/14/2016	945
GW	MW15A	6364.37	19.6	6341.26	N/A	8.00	7.99	6.71	6.71	172.8	1677	0.6	Peristaltic	low flow	5/15/2016	1240
GW	MW16A	6346.71	6.88	6336.76	0.30	14.50	6.73	7.33	7.33	-78.2	1655	0	Peristaltic	low flow	5/10/2016	1650
GW	MMW006	6485.46	265.61	6218.51	0.35	25.00	9.24	7.53	7.53	125.4	523	0	Bladder Pump/Nitrogen	low flow	5/10/2016	1527
GW	MMW007	6619.89	72	6584.05	0.1	87	10.19	7.06	7.06	152.2	237	0	Bladder Pump	low flow	5/14/2016	1105
GW	MMW009	6789.2	211.15	6574.2	0.40	35.25	9.35	7.1	7.1	-1.5	639	0	Bladder Pump/Nitrogen	low flow	5/13/2016	1110
GW	MMW010	6462.62	1.61	6457.02	1.00	25.00	7.04	6.45	6.45	175.9	1793	0	Bladder Pump	low flow	5/12/2016	1633
GW	MMW011	6268.31	73.75	6194.11	0.25	8.75	10.31	7.28	7.28	94.4	833	0	Bladder Pump	low flow	5/12/2016	1155
GW	MMW012	6488.72							DRY						5/13/2016	900
GW	MMW013	6634.46	3.3	6630.21	0.80	14.75	7.37	6.91	6.91	169.2	680	0	Bladder Pump/Nitrogen	low flow	5/14/2016	1453
GW	MMW017	6313.86	38.77	6274	0.04	4.40	10.63	6.82	6.82	171.2	1379	0	Bladder Pump	low flow	5/11/2016	1755
GW	MMW018	6459.52	8.65	6447.16	0.10	5.00	7.64	7.29	7.29	160.4	419	0	Bladder Pump	low flow	5/11/2016	1123
GW	MMW020	6525.71	274.25	6245.26	N/A	49.50	8.77	6.96	6.96	164.7	899	0.8	Bladder Pump/Nitrogen	low flow	5/15/2016	1120

TABLE A-2 2016 SPRING GROUNDWATER FIELD PARAMETERS P4 MONSANTO, IDAHO

(Page 2 of 2)

Matrix	Station ID	Elevation MP (ft-AMSL)	Static Water Level (ft BMP)	Elevation Static Water (ft-AMSL)	Purge Rate (L/min)	Cumulative Purge Vol. (L)	Water Temp (deg. C)	рН	ORP (mV)	D.O. (mg/L)	Spec Cond (uS/cm) @ 25 deg. C	Turbidity (NTU)	Sampling Device	Comments	Date	Time
GW	MMW021	6436.3	210.12	6224.52	0.34	20.00	9.52	7.19	7.19	133.3	625	0	Bladder Pump	low flow	5/10/2016	1342
GW	MMW022	6635.85	202.11	6425.65	0.25	21.50	9.45	7.1	7.1	149.7	925	1.3	Bladder Pump	low flow	5/12/2016	1535
GW	MMW023	6230.92	106.62	6122.66	0.88	28.50	9.16	6.99	6.99	-113.3	983	0	Bladder Pump	low flow	5/12/2016	1025
GW	MMW024	6704.05	54.29	6642.67	0.75	14.00	8.07	7.07	7.07	152.1	1026	0	Bladder Pump/Nitrogen	low flow	5/14/2016	1417
GW	MMW025	6612.87	40.1	6583.77	0.20	5.50	7.95	7.95	7.95	128.3	289	0	Bladder Pump	purge and sample	5/14/2016	1225
GW	MMW026	6599.21	284.7	6312.49	0.65	35.25	9.78	7.46	7.46	48.6	427	0	Bladder Pump/Nitrogen	low flow	5/10/2016	1127
GW	MMW027	6491.07	91.75	6382.43	0.55	12.25	8.34	7.07	7.07	104.9	1115	0	Bladder Pump	low flow	5/13/2016	1235
GW	MMW028	6316.91	63.96	6237.15	0.75	12.25	8.35	7.53	7.53	101.2	565	0	Bladder Pump	low flow	5/12/2016	1255
GW	MMW029	6498.67	13.64	6478.96	0.40	14.75	8.12	6.94	6.94	174.1	1562	0	Bladder Pump	low flow	5/11/2016	1250
GW	MMW030	6355.25	33	6328.67	N/A	10.00	8.72	7.72	7.72	142.5	405	0	Bladder Pump	purge and sample	5/10/2016	1340
GW	MMW031	6346.42	97.83	6247.74	0.85	16.00	9.57	7.82	7.82	128	260	0	Bladder Pump	low flow	5/13/2016	1700
GW	MMW032	6446.39	22.8	6424.39	0.75	15.00	6.13	7.36	7.36	190.2	382	0	Bladder Pump	purge and sample	5/15/2016	915
GW	MMW033	6489.84	26.26	6478.2	1.50	105.00	6.66	7.7	7.7	49.2	465	0	Bladder Pump	purge and sample	5/11/2016	1415
GW	MMW034	6640.31	7.31	6627.4	0.35	15.75	8.12	7.36	7.36	164.6	554	0	Bladder Pump/Nitrogen	low flow	5/14/2016	1545
GW	MMW035	6500.34	92.87	6390.2	0.45	13.75	8.29	6.95	6.95	120.3	1456	0	Bladder Pump/Nitrogen	low flow	5/13/2016	1315
GW	MMW036	6425.18	112.66	6309.07	0.40	10.25	9	7.52	7.52	142.2	421	0	Bladder Pump	low flow	5/13/2016	1540
GW	MMW037	6419.39	113.35	6302.39	0.35	21.50	9.6	7.51	7.51	137.8	428	1.8	Bladder Pump/Nitrogen	low flow	5/13/2016	1500

deg. C degrees Celsius

ft-AMSL feet above mean sea level

ft-BMP feet below measuring point

GW Groundwater

liters per minute

liters

mV N/A NTU uS/cm

mg/l

milligrams per liter

millivolts
Parameter not required / not collected

uS/cm

Nephelometric Turbidity Units microSiemens per centimeter



							Pa	ge: of _	<u>+</u>
Project No.:	10509188.0	102 Client: _	P4 Spring	2016	_ Date: _	5/15/11	⊈_ WellI	D: MBW	00ke
Task: Gro	undwater S	ampling	Field Crew:	A.Pe	ttley,	Ton OS	bone		
Measuring P	oint (MP):	()CN	-		(Water Le	evel (WL):	2.25	ft below	<u>/ MP</u>
Sampling Me	ethod (see app	licable calculat	ions below): _	LOW	<u>Flaw</u>	De	vice: <u>Dan</u>	rastalic	
			Low	Flow Samp	oling		·		
Minimum Pui Tubing vol =	rge = 2* (feet * 0.03L/ft, Bladd	vol tubing + vol der pump vol =	ol pump): 0.5L]	1.85	Sta	rting PSI = (1)	∕₂ WL + 20):		
			3-Volum	e Purge Sa	mpling				
Total Depth ((TD): <u> </u>) ft below MP	Water Heigl	ht (H):	ft	below MP C	asing Radius	s (r):	ft
Three Purge H= TD-WL,	Volumes = 3* Pi=3.1415, 1ga	[Pi * r ² * H * 7.4 al = 3.785L, 4in	8]: casing=0.65	3gal/ft, 6in d	casing = 1.	<u>gal</u> Req 469gal/ft	uired Run Ti	me:r	min/ hr
. ,	/		STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal o (/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤1D 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1400	2.35	AMPROPAGE	.5	6.59	7.22	1645	6.74	1105	Ø
1415	2.35	acident .	1.5	6.54	7.21	164.5	6.74	1095	
1420	2.35	.25	2.75	6.53	7.17	164.5	6.62	1087	10.4
1425	2.33	. 25	<u> </u>	6.58	7.17	163,9	6.54	1081	0.5
Account of the Control of the Contro									
Continue stabi	lization readings	s on additional pa	iges if necessar	ТУ					
		T	F	INAL REAL	DINGS			r	
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal o Urnin)	Cumulative Purge Vol (gal or(£))	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1430	2.33	-25	5.25	668	7.17	163.9	6.55	1081	0.3
SAMPLE ID:	16050	JUM &	1000	e-F,	U	Т	IME: L	-30	
		Settings: PSI: _	•	•	S€	ec Exhaust:	we will the second seco	<u>sec</u>	
wall.	nloaded	a lock	meer						
- Well	Nuds	a lock	•						

					FORM		Pa	ige: of				
Project No.:	10509188.0	102 Client: _	P4 Spring	2016	Date: <u>(</u>	5/15/19	Well I	D: MBW	009			
Task: Gro	oundwater S	ampling	Field Crew	: BJ	EU	,						
		TOC IN					0.75	ft below	v MP			
Sampling Me	ethod (see app	licable calculat	ions below):	Iow ?	WOLF	De	evice: POV 19	Staltic	tule			
				Flow Sam								
Minimum Pu	rge = 2* (feet *	vol tubing + vo	ol pump):(0.78L	Star	rting PSI = (½ WL + 20):					
Tubing vol =	0.03L/ft, Bladd	der pump vol =										
	10 1			ne Purge S	Constitution of the consti			. YY:				
Total Depth (TD): 10 ft below MP Water Height (H): ft below MP Casing Radius (r): ft Three Purge Volumes = 3*[Pi * r² * H * 7.48]: 10.53 gal Required Run Time: min/ hr H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft												
TI- TD-VVL,	F1-0.1410, 19	ai – 0.700L, 4ii	odollig 0.00	ogant, on	odoling	10094						
			STABI	ILIZATION	READING	S			F			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or (/min)	Cumulative Purge Vol	Temp (C)	READING pH	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	4.45.75.75			
100 100 100 100		Purge Rate (gal or L/min) Low flow ≤ 1L 3-vol = no limit	Cumulative	Temp	128	ORP/Eh	TO THE PROPERTY OF THE PARTY OF	Conductivity	(NTC			
(24 Hr) Stabilization	(ft below MP)	(gal or (Jmin)) Low flow ≤ 1L	Cumulative Purge Vol (gal or L) 2 tube vol or	Temp (C)	рН	ORP/Eh (mv)	(mg/L)	Conductivity (µS/cm)	(NTU			
(24 Hr) Stabilization	(ft below MP) +/- 0.3 ft	(gal or (/min) Low flow ≤ 1L 3-vol = no limit	Cumulative Purge Vol (gal or L) 2 tube vol or 3 well vol	Temp (C) +/- 1C	pH +/- 0.1	ORP/Eh (mv) +/- 10	(mg/L) +/- 0.2	Conductivity (µS/cm) +/- 3%	(NTL ≤5			
(24 Hr) Stabilization	(ft below MP) +/- 0.3 ft	(gal or (/min)) Low flow ≤ 1L 3-vol = no limit	Cumulative Purge Vol (gal or L) 2 tube vol or 3 well vol	Temp (C) +/- 1C	pH +1-0.1 6.38 6.76	ORP/Eh (mv) +/- 10 71. 0 73. 4 54.10	(mg/L) +/- 0.2 	Conductivity (µS/cm) +/- 3%	(NTU			
Stabilization Limit 43 99 1380 1385	(ft below MP) +/- 0.3 ft	(gal or(L/min)) Low flow ≤ 1L 3-vol = no limit O₀ A O₀ A	Cumulative Purge Vol (gal or L) 2 tube vol or 3 well vol O.U.S L.40 2.0	Temp (C) +/-1C 7.2 1.3 7.4 7.4	pH +1-0.1 6,88 6.76 6.76	ORP/Eh (mv) +/- 10 71.0 73.4 54.6	(mg/L) +/- 0.2 0 2 0 4 0 64	Conductivity (µS/cm) +/- 3% /OTT /OH /OOH /D2O	(NTU ≤5 (A.1)			
(24 Hr) Stabilization	(ff below MP) +/- 0.3 ft 3.3 3.71 3.71	(gal or (/min)) Low flow ≤ 1L 3-vol = no limit O₀ A O₀ A	Cumulative Purge Vol (gal or L) 2 tube vol or 3 well vol O.U.S L.YO	Temp (C) +/- 1C 7. 2 1. 3	pH +1-0.1 6.38 6.76	ORP/Eh (mv) +/- 10 71.0 73.4 54.6	(mg/L) +/- 0.2 	Conductivity (µS/cm) +/- 3% /OTT /OH /OOH /ORODO	(NTU ≤5 ().()			
Stabilization Limit 43 99 1380 1385	(ff below MP) +/- 0.3 ft 3.3 3.71 3.71 3.70	(gal or (/min)) Low flow ≤ 1L 3-vol = no limit O. 2 O. 2 O. 2 O. 2 O. 2	Cumulative Purge Vol (gal or L) 2 tube vol or 3 well vol O.U.S L.40 2.0	Temp (C) +/-1C 7.2 1.3 7.4 7.4	pH +1-0.1 6,88 6.76 6.76	ORP/Eh (mv) +/- 10 71.0 73.4 54.6	(mg/L) +/- 0.2 0 2 0 4 0 64	Conductivity (µS/cm) +/- 3% /OTT /OH /OOH /D2O	Turbid (NTU ≤5 4,1~ 0,6 0,6			
Stabilization Limit 43 99 1380 1385	(ff below MP) +/- 0.3 ft 3.3 3.71 3.71 3.70	(gal or (/min)) Low flow ≤ 1L 3-vol = no limit O. 2 O. 2 O. 2 O. 2 O. 2	Cumulative Purge Vol (gal or L) 2 tube vol or 3 well vol O.U.S L.40 2.0	Temp (C) +/-1C 7.2 1.3 7.4 7.4	pH +1-0.1 6,88 6.76 6.76	ORP/Eh (mv) +/- 10 71.0 73.4 54.6	(mg/L) +/- 0.2 0 2 0 4 0 64	Conductivity (µS/cm) +/- 3% /OTT /OH /OOH /D2O	(NTU			

			F	INAL REAL	DINGS				
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1340	3.70	0.12	3.6	7.5	6.79	60.4	0.62	1043	0,55

SAMPLE ID: 1056WMBWOC	9-4,F	TIME: _	1540	_
Final Low Flow Sampling Settings: PSI:	Charge:	sec Exhaust:	sec	

Continue stabilization readings on additional pages if necessary

WELL SAMPLING FORN	W	/ELI	LSA	MPL	ING	FORM
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	1		1	
Page:	-	of	ı	

			ampling							
		oint (MP):							ft below	,
	Sampling Me	thod (see app	licable calculati	ions below):	Purge	- Dry/	Sangle De	evice: PC	ristalt	ic/-f
				Low	Flow Sam	pling				
	Minimum Pur Tubing vol =	rge = 2* (feet * 0.03L/ft, Bladd	vol tubing + vol der pump vol =	ol pump): 0.5 L]		Sta	rting PSI = (½ WL + 20):		80'
				3-Volum	e Purge S	ampling			_	, الأر
	Total Depth (TD): 14.83	ft below MP	Water Heig	ht (H);	BT ft	below MP C	asing Radiu	s (r): 80	ft
	Three Purge	Volumes = 3*	[Pi * r² * H * 7.4	8]:	30	1-11.0	gal Rec	uired Run T	ime: 100	min/ hr
	H= TD-WL, I	Pi=3.1415, 1ga	al = 3.785L, 4in	casing=0.65	3gal/ft, 6in	casing = 1.	469gal/ft			
Γ				STABI	LIZATION	READING	s			
F	Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal o Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidi (NTU)
ŀ	Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
Ì.	1054	0,0	445	Boonl	6.0	6.99	78.€	3,10	<i>\$9</i> 3	0.68
Ì	1059	5.5	<u> </u>	2L	5.8	6.66	83.0	1.07	813	LI
֓֡֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	1104	9.9		3 L	6.1	6.60	82.9	(.13	802	2.65
	1106	12.4		4.42	5,9	6.Gl	81.7	4.04	814	35.4
	1208			Dry						k
-	1230	rechai	and t	200 C	0	San	Aple.	,	A STATE OF THE PROPERTY OF THE	7
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}										
ŀ										
Ľ			on additional pa	ges if necessa	ry					
г	Rech	arge	14.	per	1 min	20 s.	دد			····
		,		r	INAL REA	DINGS		T		
	Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal of L/min)	Cumulative Purge Vol (gal orL)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidil (NTU)
ſ	1230	3.0	0.9	4.41	5.7	6.95	82.1	3.03	784.4	4.17

			WELL S	SAMPLING	FORM		Pa	ge: of	_1
Project No.:	10509188.0	102 Client: _	P4 Spring	2016	_ Date: (15/15/11	<u> </u>	D:MBN	1027
Task: Gro	undwater S	ampling	_ Field Crew	: BU	EU				
		DCN					10.0	ft below	MP
		licable calculat	ions below):	10W Flow Samp		De	vice: PCV	istalt tu	icl and
Minimum Pur Tubing vol =	rge = 2* (feet * 0.03L/ft, Bladd	vol tubing + volder pump vol =	ol pump):			rting PSI = (1	⁄2 WL + 20):		_
		ft below MP [Pi * r² * H * 7.4 al = 3.785L, 4ir	Water Heig						
			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal of L/min)	Cumulative Purge Vol (gal or(L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1005	6.1	0.2	all	10-0	7.37	74.0	6.35	893	3.39
1010	6.3	691×10.2	0.7	6.0	7.33	74.9	5,95	890	2.31
1015	6.3	0.2	1.04	6.0	7.26	75.9	5.61	897	1.96
1020	10.3	0.2	2.0	5.9	7.26	74.5	5.56	898	1,92
1025	6.3	0.2	2.30	5.9	7.26	73.5	5,52	903	1.36

			F	INAL REA	DINGS				
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or U/min)	Cumulative Purge Vol (gal of L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
025	lei3	0.2	2.70	5.9	7.26	73.5	5.52	903	1.36

SAMPLE ID:	1605GINMBW	027-U.F	TIME:	1050	
At 100 0 = 100 =					
Et al Laur Elau	Canadian Cattiana DOL	Ohamai	Coleman	-6.2.6.	

Final Low Flow Sampling Settings: PSI: _____ Charge: _____ sec Exhaust: ____ sec

Continue stabilization readings on additional pages if necessary

						J.	Pa	ge:	+
		102 Client: _					Well I	D:MBW	08
Task: <u>Gro</u>	undwater S	ampling	_ Field Crew	:	BUE	<u> 34 _ </u>			
Measuring Po	oint (MP):	TOC	<u>// </u>		_ Water Le	evel (WL):			
Sampling Me	thod (see app	licable calculat	ions below): ∫ Low	Wordy Flow Samp	(ا تصليلاً			ect tuc
Minimum Pui Tubing vol =	rge = 2* (feet * 0.03L/ft, Bladd	' vol tubing + vo der pump vol =	ol pump): 0.5L]		Sta	rting PSI = (1	⁄2 WL + 20):		
				e Purge Sa	-				
Total Depth (TD): 14. 14	ft below MP	Water Heig	ht (H):	ft	below MP C	asing Radius	s (r):	ft
Three Purge H= TD-WL,	Volumes = 3* Pi=3.1415, 1ga	[Pi * r ² * H * 7.4 al = 3.785L, 4ir	l8]: n casing=0.65	3gal/ft, 6in	casing = 1	<u>gal</u> Req .469gal/ft	uired Run Ti	me:n	nin/ hr
			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L, 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1045	9.2			10.4	7.02	68.6	1.6	1910	2.1
1050	10.4	W		6.3/	(v:16	69.8	1.23	12/1/4	1.99
1055	12.7			6.8	Color	71.0	0.84	1298	8001
1113	DRU		2 011	A PARTY OF THE PROPERTY OF THE			tan garage and a second		
1130	recording	red to	3.91	ps -	- 50	imple	361		
			. **	/					
		-							
Continue stati	lization roadings	s on additional pa	ages if necessa	rv					
Continue Stabi	nzation readings	on additional pa	igos ii necessa	',					
			F	INAL REA	DINGS				
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1130	3.9			6.6	6.76	78.a	0.93	1334	11.5
SAMPLE ID:	Mans	SWAMPY	078-0	I,F				1130	
		Settings: PSI: _		Charge:	S	ec Exhaust:	<u></u>	<u>sec</u>	
	. •								

WELL SAMPLING FORM Page: of
Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/11/16 Well ID: M3w032
Task: Groundwater Sampling Field Crew: A. Rottley, L. Rolly
Measuring Point (MP): ΔΥΚΕΙ ΤΟΣ Η Water Level (WL): 7.35 ' ft below MP
Sampling Method (see applicable calculations below): bu Flow Device: Ports full >
Low Flow Sampling
Minimum Purge = 2^* (feet * vol tubing + vol pump): With 1.86 Starting PSI = $(\frac{1}{2}$ WL + 20): Tubing vol = 0.03 L/ft, Bladder pump vol = 0.5 L] $2(\frac{14.4}{0.03})$
3-Volume Purge Sampling
Total Depth (TD):ft below MP
Three Purge Volumes = $3*[Pi*r^2*H*7.48]$:min/ hr H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	pH	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤5
1441	7.35								
KACAUS 1-150	7.35	,25	1.5	4.66	7.14	129.0	6.70	2078	5.8
1455	7.35	.25	3.00	4.84	7.12	133.2	6.59	2079	0
1500	7.39	.25	4.25	4.12	1.12	135.5	6.62	2087	0

	FINAL READINGS										
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	Нq	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)		
1500	7.37	0.25	4,25	4.72	7.12	· -	6.62	2087	つ		

SAMPLE ID: 1605 WW	M15W032-1-U,F	1605 GWM (3W032-2	UNE: 1500, 1515	
<u> </u>		= 5 t= 1+in		
Final Low Flow Sampling Setti	ings: PSI: Cl	harge: <u>sec</u> Exha	ust:sec	

WEL	LSA	MPL	NG	FORM

Page: ____ of ____

Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/14/16 Well ID: MBW048
Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 2/17/16 Well ID: MISWO 98
Task: Groundwater Sampling Field Crew: T. Ober B. Jones E. Feer
Measuring Point (MP): Water Level (WL): O. 75 ft below MP
Sampling Method (see applicable calculations below): Low Flow Device: persotal find the desired to
Low Flow Sampling
Minimum Purge = 2* (feet * vol tubing + vol pump): Starting PSI = (½ WL + 20): Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L]
3-Volume Purge Sampling
Total Depth (TD): 8.38 ft below MP Water Height (H) ft below MP Casing Radius (r):ft
Three Purge Volumes = 3*[Pi * r² * H * 7.48]: 2-64 L gal Required Run Time: min/ hr H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4ip.casing=0.653gal/ft, 6in casing = 1.469gal/ft

	STABILIZATION READINGS										
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or ())	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)		
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5		
1505		Started	l pu	A-B	*Grandon*				20		
1508	1.0	0 85L	0.2'1	6:5	7.13	22.8	1.32	173.6	9.50		
1513	1.05	.085L	1.04	6.3	6-95	26.4	0.75	173.2	55.4		
1518	1.05	.085L	1.45L	6.3	6.60	24./	0.65	176.3	50.4		
1523	1.05	.0854	1.80L	6.3	6.31	23.7	0.62	178.1	48.0		
1528	1.05	.085L	2.401	6.1	6.74	16.7	0.64	183.7	29.9		
1533	1,05	.085L	2.70L	6,0	6.72	14.9	0.61	186.3	22.0		
1538	1.05	.085L	3.45	5.8	6.64	14.3	0.53	189.0	15.3		
1543	1.05	.035L	4.00	5.7	6.54	15.0	0.50	189.9	14.2		
1548	1.05	.085L	4.60	5.7	6.53	11.4	0.51	190.8	10.2		
1553	1.05	. 085L	5.20	5.g	6.60	6.8	0.48	192.0	6.05		
1558	1.05	.0851	5,90	5.8	6.62	6.1	0.42	192.9	5.55		
Continue stabi	lization readings	s on additional pa	iges if necessai	ry							

	FINAL READINGS									
Time (24 Hr)	Water Level (fl below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal of L)	Temp (C)	рH	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)	
1613	1.10	.085 L	7.80	5.8	6.59	4.8	0.42	1941.7	2,96	

SAMPLE ID: 1605 GWMBW048 - 1	1), F	TIME:	613
Final Low Flow Sampling Settings: PSI:	-	sec Exhaust:	sec

WELL SAMPLING FORM Continued Stabilization Readings

Page: 2 of 2

Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/14/16 Well ID: MBwo 48

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1603	1.05	,085L	6.30	5.8	6.61	5.4	0.45	193.8	4.45
1608	1.10	10856	7.00	5.8	6.58	6.4	0.42	194.4	2.94
16#3	1.10	.035L	7.80	5.8	6.59		0.42	194.7	2.96
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Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/14/16 Well ID: M3W085							
Task: Groundwater Sampling Field Crew: T. 05bo() B. Jacs E. Tengel							
Measuring Point (MP): TOCN Water Level (WL): 1.7 ft below MP (2.00							
Sampling Method (see applicable calculations below): Device: Perstulfic /dedicated f.							
Low Flow Sampling							
Minimum Purge = 2* (feet * vol tubing + vol pump): Purge Scarple Starting PSI = (½ WL + 20):							
3-Volume Purge Sampling							
Total Depth (TD): 12,25 ft below MP Water Height (H): 1,7 ft below MP Casing Radius (r): 1,5							
Three Purge Volumes = 3*[Pi * r² * H * 7.48]:							

			STAB	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
12:23	1.7	./25		5.5	7.71	49.2	34.0	415.0	4.25
12:29	5,5		2 L	5.2	7.38	56.4	6.11	362.8	11.4
12:33	6.8		46	5.2	7.18	59.6	6.08	364.5	34.7
12:37	7,5		64	4,8	7.02	61.7	6.61	376.5	21,2
小43	8.1		91	4.8	6.95	64.0	6,57	377.0	27.9
12:47	0,4		11 L	4,9	6.92	63.1	6.85	373.0	17.9
12:52	and the state of t	Productive (American September 1997)	13 L						
12:53	8,45	.5L	13.5L	4.9	6.92	59.8	6.94	372.7	6.0
12:57	8.45	0.5L	15L	4.8	6.87	62.7	7.06	372.1	2,38
13:03	8,50	0,3256	17L	4.8	6.27	63.4	7,09	370.0	2.8(
13:07	8.5	0.5L	19.56	5.0	6.86	64.7	7,17	369.1	3.16
Continue stabi	lization readings	s on additional pa	iges if necessa	гу					

FINAL READINGS									
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pΗ	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1307	8,5	0.56	19.5L	5.0	6.86	64.7	7.17	369.1	3.16

SAMPLE ID: 1605 GWM	3 W085 - U, F	TIME: <u>13.0</u>	<u>'7</u>
Final Low Flow Sampling Settings	: PSI: Charge:	sec Exhaust: se	<u>c</u>
x startal to drop then held at	when porping at low	est passible setting	mount to pury e d
then held at	8.45 below TOCN	purye 3 Unknes	of mater collum

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Page: of							
Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/14/16 Well ID: MBW087							
Task: Groundwater Sampling Field Crew: T. Polow B. Jove F. Yzy-							
Measuring Point (MP): To CN Water Level (WL); /, 4 ft below MP							
Sampling Method (see applicable calculations below): Low Flow Device: Poristalty / Tubly							
Low Flow Sampling							
Minimum Purge = 2* (feet * vol tubing + vol pump):							
3-Volume Purge Sampling							
Total Depth (TD): 12.1 ft below MP Water Height (H): 1,4 ft below MP Casing Radius (r): 1.5							
Three Purge Volumes = 3*[Pi * r² * H * 7.48]:min/ hr H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft							
/							

	STABILIZATION READINGS								
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤5
1045	1.6	0.15L	.3L	6.4	7.46		2,27	581.4	70.2
1050	1,6	0,15	1,05L	6.2	7.08	49.7	1, 13	580. b	40.6
1055	1.6	0.15	1.8L	6.0	6.89	5/19	0.86	586.8	23.6
1100	1.6	0.15	2.55L	6.0	6.83	52.7	0.67	5 83.0	23.9
1105	1.6	0.15	3.3 6	6.0	6.81	53.7	0.55	583.7	21.6
1110	1.6	0-15	4.056	6.0	6.78	54.1	0.48	583.9	15.9
1115	1.6	0.15	4.8 L	5.9	6.75	54.8	0.47	584.8	12.4
1120	1.6	0.45	5.55L	5.9	6.76	55.2	0.45	585.0	8.49
1125	1.6	0.125	6.05L	6.0	6.75	55.5	0.44	585.0	8.36
1130	1.6	0,125	6.675L	5.9	6.75	56.0	0,44	584.1	7.07
1135	1.6	0-125	7.3L	6.0	6.75	56.3	0.46	585.3	9.44
1140	1.6	0.125	7.425L	6.0	6.75		۵.41	585.0	9.00
	lization readings	O · (25 s on additional pa		L	6.45	56.1	۵.4۱	25.0	9.00

FINAL READINGS									
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1145	1.6	0.125	8.55L	5.9	6.75	56.3	0.47	584,5	9.00

SAMPLE ID: 1605 MRWO37 - U. F		TIME: 1145
Final Low Flow Sampling Settings: PSI:	Charge: sec Exhaus	: <u>sec</u>

Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u> Date: _	5/9/16 Well ID: MBW 099
Task: Groundwater Sampling Field Crew: A. Pettley. L.	Rodrigue
Measuring Point (MP): <u>Top よ well におう</u> Water Le	evel (WL): 0.95' ft below MP
Sampling Method (see applicable calculations below):	Device: Perssoltic
Low Flow Sampling	
Minimum Purge = 2* (feet * vol tubing + vol pump): Sta Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L]	rting PSI = (½ WL + 20):
3-Volume Purge Sampling	•
Total Depth (TD): <u>\1.29 ft below MP</u> Water Height (H): <u> </u>	t below MP Casing Radius (r):ft
Three Purge Volumes = 3*[Pi * r² * H * 7.48]: H= TD-WI	gal Required Run Time:min/ hr

			STAB	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ (L) 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
voices	GIMP , ARE								
1713	4.48'	.35 /min		6.91	7.17	144,7	4.65	331	D
171Y	4.13	.35 4/min		6.43	6.83	150.7	4.74	332	0
1723	11.13'	.357 min		6.54	6.17	148.4	5.44	334	٥
5/19/16	Dung	Oamskille	, plv	Dunny	Dry	n 5/9/	16		
	U	Υ .		1 00	•				
1303	1.91			north the second					
1305	4.15	~.35	.75	8.72	7.52	156.2	6.87	364	3.8
1308	5.50	ک.ں	2.25	7.79	7,38	159.2	8.49	317	ĮØ
1311	7.20	~.5	3.75	9.39	1.02	1665	7.66	308	2.3
Continue stabi	l lization readings	on additional pa	ges if necessa	l					

			F	INAL REA	DINGS	1		Y	
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1311	1.20	~.5	3,75	9.39	7.02	166.5	7.66	308	2.3

SAMPLE ID: 1665 GW MAW 019	-U,F				TIME	<u>:: 1313</u>	
Final Low Flow Sampling Settings: PSI: _	NA	_ Charge: _	NA	sec Exha	ust:	<u>≱∕ sec</u>	
	Par Ha	1100					

								ige: of _	
Project No.:	10509188.0	102 Client: _	P4 Spring	2016	_ Date:	5/13/11	Well I	D: MBW	107
Task: Gro	undwater Sa	ampling	Field Crew:	A-Pc	++ley	<u>, L</u> .	Rodon		
		TOCH							
Sampling Me	thod (see appi	icable calculati	ions below):			De	vice:		
			Low	Flow Samp	oling				
Minimum Pur Tubing vol =	ge = 2* (feet * 0.03L/ft, Bladd	vol tubing + vol ler pump vol =	ol pump): 0.5L]	· ·	Sta	rting PSI = (1	½ WL + 20):		
		,		e Purge Sa					
		ft below MP							
Three Purge H= TD-WL, I	Volumes = 3*[Pi=3.1415, 1ga	Pi * r ² * H * 7.4 al = 3.785L, 4in	8]: casing=0.65	3gal/ft, 6in d	casing = 1	gal Req .469gal/ft	uired Run Ti	me:n	iin/ hr
			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
<u>- C</u>	<u>Suld</u>	101	Saw	plea	الكورا	<u>ll. h</u>) <u> </u>	s dup	for
Par	astall	pump	and	Case	d:an	eter +	oo Nari	our for	
9.2	rosul	bailer.	Could	not	colle	tas	ample.		
						1444 1444			
Continuo atabi	Sation readings	on additional pa	nge if necessa	N					,
Continue stabi	nzation readings	s on additional pe	iges ii necessa	· y				1	
			F	INAL REA	DINGS			1	
Time (24 Hr)	Water Levei (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Voi (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
SAMPLE ID:						7	TIME:		
Final Low Flo	ow Sampling S	Settings: PSI: _	c	harge:	<u>s</u>	ec Exhaust:		sec	
		x)~	50 W	di	C7/1	lect.		Aρ	
		100	~ ~ W	4	<u> </u>	()	•	AP 5/13,	16

						.		age: of _	
roject No.:	10509188.0	<u>102</u> Client: _	P4 Spring 2	2016	_ Date: _	3/13/14	Z Well I	D: MBW E	<u>~</u>
ask: <u>Gro</u>	undwater Sa	mpling	Field Crew:	A. 7	ettley,	L'FOL	rmen	ft below	
leasuring P	oint (MP):	TOC Cr	4)	.,,	_ Water Le	evel (WL):	17.381	ft below	<u>MP</u>
ampling Me	thod (see appl	icable calculati	ons below): _			De	vice:		-
			Low I	Flow Samp	oling T	De 17	.59		
inimum Pui ubing vol =	rge = 2* (feet * 0.03L/ft, Blado	vol tubing + vo ler pump vol =	ol pump): 0.5L]		Sta	rting PSI = (½	4 WL + 20):		
			3-Volum	e Purge Sa	ampling				
otal Depth ((TD):	ft below MP	Water Heigh	nt (H):	ff	below MP Ca	asing Radiu	s (r):	ft
nree Purge = TD-WL,	Volumes = 3*[Pi=3.1415, 1ga	Pi * r ² * H * 7.4 al = 3.785L, 4in	8]: casing=0.650	3gal/ft, 6in (casing = 1	gal Requ .469gal/ft	uired Run T	ime:n	nin/ hr
<u></u>			STABI	LIZATION	READING	is			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
Limit		0.701							
			1						
				,,,,					
ontinue stab	ilization readings	on additional pa	iges if necessa	ry					
	· · · · · · · · · · · · · · · · · · ·		·	INAL REA	DINGS				
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
-									
AMPLE ID]:					T	TME:		
:	ow Sampling S	Cottingo: DCI:		Charge:		ec Exhaust:		sec	

WEL	1 9	AA	IDI	INC	FC	RIV
VVEL		MI	n r	TIM C	3 F C	AIZIA

Page: ______ of _____

Project No.: 10509188.0102 Client: P4 Spring 2016	Date: Well ID: _MBW130
Task: Groundwater Sampling Field Crew: TO	BJ EY W
Measuring Point (MP): Toc	Water Level (WL): 1.4 ft below MP
Sampling Method (see applicable calculations below):	day Sample Device: Saister es tus.
Low Flow Sam	
Minimum Purge = 2* (feet * vol tubing + vol pump): Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L]	Starting PSI = (½ WL + 20):
25,15 3-Volume Purge S	
Total Depth (TD): 24.40 ft below MP Water Height (H):	ft below MP Casing Radius (r): ft
Three Purge Volumes = 3*[Pi * r² * H * 7.48]: H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6ir	gal Required Run Time:min/ hr
The statement from the statement of the	

05/14/16

05/15/10

			STABI	LIZATION	READING	S	r		
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
14:15					Star	+ pun	v —		-P
14:20	14.5	1.2L	5.5L	6'C	7.19	43.4	3.2	192.6	31.1
14:23	21.0	1.2 L	8L	6.10	6.98	51.2	4.17	199.4	16.9
14:25	DRY	1.2L	9,75L				11 05	0 . 67	-10
0850	3.5	0.4	-	10°C	7.77	63.	4.35	212.9	103.
								100	
		s on additional pa							

			FI	NAL REA	DINGS			1	
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductiv ≢ty (µS/cm)	Turbidity (NTU)
950	3.5	0.4	10.15	le	7.77	63.1	4.35	212.9	63.7

SAMPLE ID: 16056WBW130-U, F

TIME: 0860

Final Low Flow Sampling Settings: PSI: _____ Charge: _____ sec Exhaust: ____ sec

W	EI I	ISA	MIDI	ING	EO	DIM
vv		_ 0 M	IVIPL		$-\mathbf{U}$	r viv

Page: | of |

			102 Client: _						D: MBW	
			ampling			BJ	, EY	1 61		- (W-
	Measuring P	oint (MP):	TOC			_ Water L	evel (WL): _	1-7	ft below	MP 4.
	Sampling Me	thod (see app	olicable calculati	ions below):	ourge o	day / Si	ample De	evice: Par	1516/51E/	tub
				Low	Flow Sam	pling			+	
	Minimum Pu Tubing vol =	rge = 2* (feet * 0.03L/ft, Blade	* vol tubing + vo der pump vol =	ol pump): 0.5L]	10	Sta	rting PSI = (½ WL + 20):	10	
		25.15			e Purge S					1
	Total Depth ((TD): <u>24.41</u>	ft below MP	Water Heigh	nt (H):	10 f	t below MP	asing Radiu	s (r);	ft
	Three Purge H= TD-WL,	Volumes = 3* Pi=3.1415, 1g	[Pi * r ² * H * 7.4 al = 3.785L, 4in	.8]: casing=0.653		casing = 1	gal Red .469gal/ft	quired Run T	ime: <u>(o</u> n	nin/ hr
				STABI	LIZATION	READING	S			
	Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or (/min))	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
05/14/16	Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
	8114.					Star	+ pum	· —		-P
()	14:15			-	200	4-100	1 . 1	- 0	100 /	31.1
	14:15	14.5	1.2L	5.5L	6'C	7.19	43.4	3.2	192.6	
		21.0	1.2L	5.5L 8L	6.10	6.98		4.17	199.4	16.9
	14:20			1000	8.1°C	6.98	51.2	4.17	199.4	16.9
5/15/10	14:20	21.0	1.2 L	ġ L		6.98			199.4	16.9
5/15/10	14:20	21.0 DRY	1.2L	ġ L	8.1°C	6.98	51.2	4.17	199.4	16.9
5/15/10	14:20	21.0 DRY	1.2L	ġ L	8.1°C	6.98	51.2	4.17	199.4	16.9
5/15/10	14:20	21.0 DRY	1.2L	ġ L	8.1°C	6.98	51.2	4.17	199.4	16.9
5/15/10	14:20	21.0 DRY	1.2L	ġ L	8.1°C	6.98	51.2	4.17	199.4	16.9
5/15/10	14:20	21.0 DRY	1.2L	ġ L	8.1°C	6.98	51.2	4.17	199.4	16.9

FINAL READINGS									
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
0350	3.5	0.4	10.15	le	7.77	13.1	4.35	212.9	63.7

SAMPLE ID:	16020	9 M/R/M	150-U	TIME: 0860
1				

Final Low Flow Sampling Settings: PSI: _____ Charge: _____sec Exhaust: ____sec

WELI	SAMPL	ING	FORM

	Page: of
Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u>	Date: 5/14/16 Well ID: MBW 131
Task: Groundwater Sampling Field Crew: 1.086	on B. Jones E. Yeager
Measuring Point (MP): Toe	Water Level (WL): 1.35 ft below MP
Sampling Method (see applicable calculations below):	Plow Device: Paristaltic/

6.5

Low Flow Sampling Minimum Purge = 2* (feet * vol tubing + vol pump): ______ Starting PSI = (½ WL + 20): _____ Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L]

3-Volume Purge Sampling

Total Depth (TD): 7-85 ft below MP Water Height (H): 1.35 ft below MP Casing Radius (r): 1.5

Three Purge Volumes = $3*[Pi*r^2*H*7.48]$: gal R H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft gal Required Run Time: min/ hr

	STABILIZATION READINGS								
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal of L/min)	Cumulative Purge Vol (gal or (5))	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 fl	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1655	Star	+ 00	mpiny						-16
1700	1,47	0.07	0.5L)	6.4	6.83	48.0	8.60	177.8	142
1705	1.49	0.07	0.81	6.3	6,80	50,6	8.19	1754	57.4
1710	1.50	0.07	1.25L	6.7	6.69	54.8	7.54	167.7	27.0
1715	1,50	0.07	1.75L	6.7	6.67	56.6	7.15	165.7	15.7
1720	1.50	0.07	2.14	6.7	6.62	57.8	7.10	165.4	13.8
1725	1.50	0.07	2.651	6.5	6.58	61.3	7.22	165.5	10.8
1730	1.50	0.07	3.46	6.4	6.57	64.6	7,20	165.5	8.4
1735	1.50	0.07	3.8 L	6.3	6.51	66,4	7.26	165.3	8.6
1740	1.50	0.07	4.62	6.3	6.51	68.8	7.16	165.4	8.7
1745	1,50	0.07	<u>ち</u> し	6.2	6.5	70.5	7.33	165.7	4.86
1750	1.52	0.07	5.45L	6-3	6.5	70.8	7.16	165.5	4.96
	ization readings				6.51	71.8	7.12	111 7	11.5-
1755	1.50	10.07	5.9 L	16.2	10.01	100	ナーム	166.5	4.25

	FINAL READINGS								
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or ©)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1755	1,50	0.07	5.9 L	6.2	6.5	71.8	7.12	166.5	4,25

SAMPLE ID: 1605 GWMBW!	31-0,8	TIME: 1755	
Final Low Flow Sampling Settings: PSI:	Charge:	sec Exhaust: T sec	

	r age
Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2</u>	016 Date: 05/19/16 Well ID: 198W 135
Task: Groundwater Sampling Field Crew:	TO, BT
Measuring Point (MP):	Water Level (WL): 1-55 ft below MP
	ALL AND ACCOLD PROSTATELY / 1

Sampling Method (see applicable calculations below): Porce dry + Sample Device:

Low Flow Sampling

_ Starting PSI = (1/2 WL + 20):

3-Volume Purge Sampling

Total Depth (TD): <u>19, 8</u> <u>ft below MP</u> Water Height (H): __

Minimum Purge = 2* (feet * vol tubing + vol pump):

Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L]

ft below MP Casing Radius (r):

gal Required Run Time: _____min/ hr

Three Purge Volumes = $3*[Pi*r^2*H*7.48]$: gal R H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft

				OIADI	LILATION	READING				
	Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbiditý (NTU)
Sta	abilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0,2	+/- 3%	≤ 5
/ 00	130		1 _		5 -	furt.	Pow	10		
0	932		14	26	6.3	7,76	631	1.48	490.6	10.8
50	935		1 L	5 L	6,6	7.61	48.7	1.68	492,3	5.14
10	938		14	g L	6.7	7.32	21	10,22	486.5	
0	9414		11	116	Por	gzd	Doy			
						•				
		The state of the s								
_						d.				
								-		
				· · · · · · · · · · · · · · · · · · ·						
Con	tinua at-b	ilization readings								

	FINAL READINGS									
'	Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
	1840	1.6	0.46		6.7	7.04	63,0	1.60	449.3	4.11

SAMPLE ID:	160	5GW	MB	W13	5-0	F

Final Low Flow Sampling Settings: PSI: Charge: sec Exhaust:

				-		
WEL	.L. Si	AMI	'LIN	(-	F()I	ĸМ

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						-1/.			
Project No.:	10509188.0	0102 Client:	P4 Spring	2016	_ Date: _	5/14/16	Well	ID: MBW	1152
Task: Gro	oundwater S	ampling	Field Crew	70	, RJ	,EY		***************************************	
Task: Groundwater Sampling Field Crew: 70, 87, 6 / Measuring Point (MP): TOCK Water Level (WL): DR / ft below MP								v MP	
Sampling Me	ethod (see app	olicable calculat	tions below):			De	evice:	<u>'</u>	
			Low	Flow Sam	pling				
Minimum Pu Tubing vol =	irge = 2* (feet ' : 0.03L/ft, Blade	* vol tubing + v der pump vol =	ol pump): 0.5L]		Sta	orting PSI = (½ WL + 20):		
				e Purge S					
Total Depth	(TD): <u>14. 7</u>	ft below MP	Water Heig	ht (H): 💭	RY 1	t below MP C	asing Radiu	s (r): <u>/, S</u>	ft
Three Purge H= TD-WL,	Volumes = 3* Pi=3.1415, 1g	[Pi * r ² * H * 7.4 al = 3.785L, 4ir	18]: n casing=0.65	3gal/ft, 6in	casing = 1	<u>gal</u> Req .469gal/ft	uired Run Ti	ime:ı	min/ hr
			STABI	LIZATION	READING	iS			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤5
						, ,			
				1 10					
						<i>j</i> /			
	1		Lux	J					
	10								
	\					1			
Continue stabil	lization readings	on additional pa	ges if necessar	у				<u> </u>	
FINAL READINGS									
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pΗ	ORP/Eh	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
•									
SAMPLE ID:	160561	WMBWI	52-0	F		T	ме: <u>04</u>	°45	
Final Low Flow Sampling Settings: PSI: Charge: sec Exhaust: sec									

Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u>	Date: 5/10/16 Well ID: MMW006					
Task: Groundwater Sampling Field Crew: A.P.C++L Measuring Point (MP): 1 & Coxing Sampling Method (see applicable calculations below): Low Fu	Water Level (WL): 265. It below MP					
Low Flow Sampli						
•	-					
Minimum Purge = 2* (feet * vol tubing + vol pump): 20・6 に Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L] 2(321(6.03%) +の	Starting PSI = (½ WL + 20):					
3-Volume Purge Sampling						
Total Depth (TD):ft below MP Water Height (H):	ft below MP Casing Radius (r):ft					
Three Purge Volumes = 3*[Pi * r² * H * 7.48]: H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in ca						

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube voi or 3 well voi	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1424	265.56		-	%.13	7.54	127.1	D	507	D
1432	265.61	.35 4 No	3.5	8.88	7.48	130.3	4.45	517	୧୬ମ ି
1442	265.59	.35 4m	7.0	9.08	7.52	132.1	4.62	520	12.8
1452	265.61	.35	1年511.0	9.51	7.53	130.1	5.25	520	165 il.l
1502	265.65	. 35	15.0	9.12	7.53	128,9	5.01	521	13.9
1512	265.61	~.35	6.31	9.32	7.52	130.7	4.58	520	20.5
1522	265.61	~ . 15	21.5	9.26	1.50	131.9	5,33	521	45.2
1527	265.61	N.75	26.0	9.24	7.53	125.4	5.02	523	D
Continuo stabi	ization readings	on additional pa	orace if nacocco						

FINAL READINGS									
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1527	265.61	~35 /mi	25.0	9.24	7.53	125.4	5.02	523	Q

 SAMPLE ID: 1605 GW MMW 006-U,F
 TIME: 1530

 Final Low Flow Sampling Settings: PSI: 150
 Charge: 18 sec Exhaust: 16 sec

Downald Transver

Bubbles formed on sensor, affected bo and two. Downard proper levels by by.

			0	
Page:	I	of	۷_	

Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u> Date: <u>57</u>	14/10 Well ID: MNW007
Task: Groundwater Sampling Field Crew: (Rettley ,	L. Rodina
Measuring Point (MP): Water Lev	el (WL): 34・フゾ ft below MP
Sampling Method (see applicable calculations below): Low Flour	Device: Bledder/ Congression
Low Flow Sampling	
Minimum Purge = 2* (feet * vol tubing + vol pump): (6.21 Starti Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L] 2(お7*(・07がは)+3)	ng PSI = (½ WL + 20):
3-Volume Purge Sampling	
Total Depth (TD):ft below MP Water Height (H):ft below MP	elow MP Casing Radius (r):ft
Three Purge Volumes = $3*[Pi*r^2*H*7.48]$: H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.4	

			STAB	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рΗ	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
0911	34.75						,		
0920	30.0	0.25	3.0	7.70	7.01	145.2	2.37	240	0.3
0 मैसेंड	37.59	1.0	8.0	7.29	6.77	(५४.७	1.45	243	0
940	41.05	(.0	23.0	7.54	7.00	129.6	1.29	242	ب
955	45.61	1.06	38.0	7.31	6.99	130,5	1.31	238	0
1010	56.02	peace 2	53.0	7.20	7.02	134.2	2.27	229	0
14 1025	62.45	1,0	68.0	7.20	7.03	133.4	2.66	228	10
1040	70.30	0.6	83.0	7.62	7.08	139.3	2.77	227	0
1050	71.15	0.1	44.0	8.26	7.09	1412.7	297	228	0
1055	11.16	0.1	४५.५	9.28	7-09	143.8	2.88	230	0
1100	11.18	6.(85.0	9.08	7.10	144.8	2.81	231	0
1105	71.85	0.1	46.5	10.10	7.10	1461	2.59	233	0
Continue stabi	lization readings	s on additional pa	ges if necessa	ry					

(Clayo)

FINAL READINGS									
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	pŀl	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
405	71.85	0.1	85.5	10.10	7.10	146,	2.59	233	-0
1120									

SAMPLE ID: 1605 GWMM WOOT - U, F T MS, MSD TIME: 1/20

Final Low Flow Sampling Settings: PSI: ____ Charge: ___ sec Exhaust: ___ s

· Downloaded transdour and Baro.

· MS/MSID Bayoth Sample

WELL SAMPLING FORM Continued Stabilization Readings

Page: 2 of 2

Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/14/16 Well ID: MMW007

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
110	71.89	0.1	0.98	10.32	7.01	148.5	2.26	235	0
1115	12,01	0-1	86.5	4.78	7.06	152.1	208	238	0
H2 1120	72.0	0.1	87,0	10.19	7.06	152.2	2.15	237	0
	y≠ (,	populis u	in star	suzin	Da,	152.1 152.2 Possibl.	Due to	•	
<u>-</u>		DOMP i	Sucs.	0		\			
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Page: 1 of 1

		STAB	LIZATION	READING	S			
Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
211.05								
211.15	.25	,75	9.54	7.47	140.1	7.52	625	D
211.21	0.40	4.18	9.24	7.02	-44.6	0.51	636	D
	0.55	8.15	9.32	7.06	-100.2	0.13	639	2.1
211-16	0.4	14.25	9.30	7.08	-56.8	0.06	639	0,8
211.16	0.415	18.25	9.46	7.09	-24.5	0.04	640	0.3
211-14	0.40	22.75	9.42	7.10	-14.1	6.01	640	Q
24 211.18	015	27.25	9.46	7.10	-11.4	0	641	0
211.21	0.4	31.25	9.43	7.10	-3.8	0	640	0
211.15	0.4	31.25	9.35	210	-1.5	0	639	O
	(ft below MP) +/- 0.3 ft 211.05 211.15 211.21 211.14 211.16 211.17 211.17 211.18 211.18	(ft below MP) (gal or L/min) +/- 0.3 ft	Water Level (ft below MP) Purge Rate (gal or L/min) Cumulative Purge Vol (gal or L) $+/-0.3$ ft Low flow $\leq 1L$ 3-vol = no limit 2 tube vol or 3 well vol 211.05 .25 .75 211.21 0.40 4.18 211.10 0.45 8.75 211.10 0.45 18.25 211.10 0.45 18.25 211.10 0.45 22.75 211.10 0.45 27.25 211.10 0.40 22.75 211.10 0.40 27.25 211.10 0.40 27.25 211.10 0.40 27.25 211.10 0.40 27.25	Water Level (ft below MP) Purge Rate (gal or L/min) Cumulative Purge Vol (gal or L) Temp (C) +/- 0.3 ft Low flow ≤ 1L 3-vol = no limit 2 tube vol or 3 well vol +/- 1C 211.05 .25 .75 9.5 ft 211.21 0.40 4.18 9.5 ft 211.14 0.55 8.75 9.32 211.16 0.45 14.25 9.46 211.16 0.45 18.25 9.46 211.17 0.40 22.75 9.42 211.17 0.40 27.25 9.46 211.21 0.4 31.25 9.413	Water Level (ft below MP) Purge Rate (gal or L/min) Cumulative Purge Vol (gal or L) Temp (C) pH $+/-0.3$ ft Low flow $\leq 1L$ 3-vol = no limit 2 tube vol or 3 well vol $+/-1C$ $+/-0.1$ 211.05 .26 .75 9.5 ~ 1 7.47 211.21 0.4 ~ 18 9.5 ~ 19 7.47 211.21 0.4 ~ 18 9.5 ~ 19 9.5 ~ 19 211.10 0.4 ~ 19 14.25 ~ 19 9.4 ~ 19 211.10 0.4 ~ 19 18.25 ~ 19.4 ~ 19 7.09 211.14 0.4 ~ 19 18.2 ~ 19 9.4 ~ 19 7.09 211.14 0.4 ~ 19 12.7 ~ 19 9.4 ~ 19 7.10 211.14 0.4 ~ 19	Water Level (ft below MP) Purge Rate (gal or L/min) Cumulative Purge Vol (gal or L) Temp (C) pH ORP/Eh (mv) $+/-0.3$ ft Low flow $\leq 1L$ 3-vol = no limit 2 tube vol or 3 well vol $+/-1C$ <	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	(ft below MP) (gat or L/min) Purge Vol (Gal or L) (C) (mv) (mg/L) Conductivity (µS/cm) +/-0.3 ft Low flow $\leq 1L$ 3-vol = no limit 3 well vol +/-1C +/-0.1 +/-10 +/-0.2 +/-3% 211.05 211.21 0.40 4.75 9.54 7.47 140.1 7.52 625 211.21 0.40 4.75 9.32 7.06 -100.2 0.13 639 211.16 0.45 8.75 9.32 7.06 -100.2 0.13 639 211.16 0.45 18.25 9.46 7.09 -29.5 0.04 640 211.14 0.40 22.75 9.42 7.10 -14.1 0.01 640 211.14 0.40 27.25 9.46 7.10 -14.1 0.01 640 211.21 0.41 31.25 9.46 7.10 -14.1 0.01 640 6410

FINAL READINGS									
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1110	211.15	0.4	35.25	9.35	7.10	-1.5	O	639	O

 SAMPLE ID: 105 6 mm 009 - 0, F
 TIME: 110

 Final Low Flow Sampling Settings: PSI: 120
 Charge: 1
 sec Exhaust: 25
 sec

Transcor and Ban Bounded

							Pag	ge:		
Project No.:	1050918 <u>8.0</u>	102 Client: _	P4 Spring 2	2016	Date: <u>=</u>	5/12/14	2 Well II	D: MMUGL	<u> </u>	
Task: Gro	- undwater Sa	ampling	Field Crew:	F 4	ethy	1 Rod	1-jan			
Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/121/6 Well ID: MMU6LO Task: Groundwater Sampling Field Crew: A Petthy Rody Measuring Point (MP): Water Level (WL): 0.55 ft below MP Sampling Method (see applicable calculations below): how Pluw Device: Blackley Coypsan										
Sampling Me	thod (see appl	icable calculati	ons below): _	Low 7	2low_	De	vice: <u>ال</u> حالي	Ode-/ (c	yrssi	
			1 1	Flass Cama	lina					
Minimum Purge = 2* (feet * vol tubing + vol pump): # 2.7 Starting PSI = (½ WL + 20): Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L] 2(24 (.03/A)(.5)										
				e Purge Sa			-			
Total Depth (TD):	ft below MP	Water Heigh	nt (H):	ft	below MP C	asing Radius	s (r):	ft	
Three Purge H= TD-WL, I	Volumes = 3*[Pi=3.1415, 1ga	:Pi * r ² * H * 7.4 al = 3.785L, 4in	8]: casing=0.65	Bgal/ft, 6in o	casing = 1.	<u>gal</u> Req 469gal/ft	uired Run Ti	me:n	nin/ hr	
			STABI	LIZATION I	READING	S		-		1
Time (24 Hr)	Water Level (fl below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)	1
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5	
1601	0.55		· · · · · · · · · · · · · · · · · · ·]
1608	(.00	(, O	2.0				2.24	1717	1.1	
1613	1.38	(.0	5.0			176.5		1792	٥	-
1618	1-60	(.0	10.0			177.0		1798	0	_
1623	1.61	1.0	45.0	7.08		176.56		1797	0	_
1620	1.65	1.0	20.0				0.41		0	-
1033	1.61	1,0	25	7.09	6.415	175.9	0.13	193	٥	-
										Do wohbh
										Doshbly Uva to
·										ertein vell
										na.
Continue stabi	l lization readings	l s on additional pa	ges if necessa	у						_
										7
	<u> </u>	Υ	<u> </u>	INAL REAL	DINGS	L				1
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)	
1633	1.61	1.0	25	7.04	6.45	175,9	0.13	(153	0	
SAMPLE ID: 1605 GWMW010 - U.F. TIME: 1633										
Final Low Flo	ow Sampling S	Settings: PSI: _	20	harge:	9 50	ec Exhaust:	7	sec		

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	1 29 41 41 41
Project No.: 10509188.0102 Client: P4 Spring 2016 Da Task: Groundwater Sampling Field Crew: A Pett	tex L Rodge
Sampling Method (see applicable calculations below):	Bleddy / Long ung p
Sampling Method (see applicable calculations below).	Device. 2 1
Low Flow Sampling	
Minimum Purge = 2* (feet * vol tubing + vol pump): 7.7 L Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L] 2 (((2*(.63) * 5))	Starting PSI = (1/2 WL + 20):
3-Volume Purge Samplir	ng
Total Depth (TD):ft below MP Water Height (H):	ft below MP Casing Radius (r):ft
Three Purge Volumes = $3*[Pi * r^2 * H * 7.48]$: H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing	gal Required Run Time:min/ hr = 1.469gal/ft

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
non	73.55								
1125	13.15	,25	1.3	10.14	1.35	19.7	5.91	४३७	0
1130	3673.76	125	2.5	७१४	7.30	83.1	5.17	836	0
1135	73.75	, 25	3.15	10.17	1,29	85.2	5.72	836	0
1140	13.75	.25	5.0	10.22	7.28	88,0	5.69	835	0
1145	73.75	.25	6.25	10.25	7.28	89.5	5,70	834	٥
1150	73.75	.26	7.5	10.25	7.28	92.4	5.76	833	٥
1155	73.25	, 25	8.75	10-31	7.28	94.4	5.73	833	<i>a</i>
Continue stabi	lization readings	s on additional pa	iges if necessa						

	FINAL READINGS												
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рΗ	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)				
1155	73.75	0.25	8.75	10.31	7.28	94.4	5.73	833	0				

SAMPLEID: 1605 GW nnwoi	1 ~ U ,	F		TIME: 11 55	
Final Low Flow Sampling Settings: PSI:	40	Charge:	13	sec Exhaust: <u>\ } sec</u>	

		0 ^	1	. <u></u>	V D	T TOPILITE A	to Cherry	1	r roject No
		(lokun	<u>, C.</u>	ttley	H. Ja	Field Crew:	102 Client: _ ampling	undwater Sa	Task: <u>Gro</u>
								` ' —	•
		/ice:	De			ons below):	icable calculati	thod (see appl	Sampling Me
				ling	low Samp	Low F			
	· · · · · · · · · · · · · · · · · · ·	2 WL + 20):	ting PSI = (1	Star		ol pump): 0.5L]	vol tubing + vol er pump vol = 0	ge = 2* (feet * 0.03L/ft, Bladd	Minimum Pur Tubing vol =
				mpling	Purge Sa	3-Volume			
ft	s (r):	sing Radius	below MP C	ft	t (H):	Water Heigh	ft below MP	TD):	Total Depth (
nin/ hr	me:m	uired Run Ti	<u>gal</u> Req 469gal/ft	asing = 1.	gal/ft, 6in d	8]: casing=0.653	Pi * r ² * H * 7.4 al = 3.785 L , 4in	Volumes = 3*[Pi=3.1415, 1ga	Three Purge H= TD-WL, I
			S	READING	IZATION	STABIL			
Turbidi (NTU)	Specific Conductivity (µS/cm)	DO (mg/L)	ORP/Eh (mv)	рН	Temp (C)	Cumulative Purge Vol (gal or L)	Purge Rate (gal or L/min)	Water Level (ft below MP)	Time (24 Hr)
≤ 5	+/- 3%	+/- 0.2	+/- 10	+/- 0.1	+/- 1C	2 tube vol or 3 well vol	Low flow ≤ 1L 3-vol = no limit	+/- 0.3 ft	Stabilization Limit
····						-			
								7	
				^) \		-
			6						· · · · · · · · · · · · · · · · · · ·
	U	MA	Ca						
		- '							
								1	
					<u> </u>	iges if necessary	on additional pa	ilization readings	Continue stabi
			·	DINGS	NAL REAI	FI			· · · · · · · · · · · · · · · · · · ·
Turbidi (NTU	Specific Conductivity (µS/cm)	ĐO (mg/L)	ORP/Eh (mv)	pН	Temp (C)	Cumulative Purge Vol (gal or L)	Purge Rate (gal or L/min)	Water Level (ft below MP)	Time (24 Hr)

								ige: of _	
Project No.:	10509188.0	102 Client: _	P4 Spring	2016	_ Date: _	5/14/1	Well I	D: MMM013	
Task: Gro	- undwater Sa	ampling TOC H licable calculati	Field Crew:	A Pol	etter,	L RODI	uju-		
Measuring Po	oint (MP):	TOC H	,		Water Le	evel (WL):	3.25	ft below	MP
Sampling Me	thod (see app	licable calculati	ons below): _	Lun F	Ton	De	vice: <u>آگار</u>	Ile/Congr	58~
				Flow Samp				/	
Minimum Pur Tubing vol = 1	ge = 2* (feet * 0.03L/ft, Bladd	vol tubing + vo ler pump vol = (l pump): 0.5L] 2 (2.86	レ Star	ting PSI = (1	½ WL + 20):		
				e Purge Sa					
Total Depth (TD):	ft below MP	Water Heigl	nt (H):	ft	below MP C	asing Radiu	s (r):	ft
H= TD-WL,	Pi=3.1415, 1g	Pi * r ² * H * 7.4 al = 3.785L, 4in	casing=0.65	3gal/ft, 6in o	casing = 1.	469gal/ft			
			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limít	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1433	3.25								
1438	3.35	0.7	3-0	7.74	7.06	163.4	8.28	686	0
1443	3.33	0.75	6.5	7.48	6.94	165.5	8.921	685	0
1448	3.30	0.585		7.40	6-93	166.7	8,74	684	0
1453	3-30	0.6	14.75	7.37	6.91	169.2	8.97	640	0
	, <								
	1								
Continue stabi	lization reading	s on additional pa	ges if necessa	ry					
				INAL REA	DINCE		- Massaco		
	<u> </u>					OPPAGE		Specific	Turbidity
Time (24 Hr)	(ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pH	ORP/Eh (mv)	DO (mg/L)	Conductivity (µS/cm)	(NTU)
1453	3.30	0.8	14.75	7.37	6.91	169.2	8,97	680	0
SAMPLE ID:	: 1405 GW	MMU013 - U				1	rime: <u></u>	453	
		Settings: PSI: _		Charge:	lo si	ec Exhaust:	9	sec	

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Page: _____ of _____

	,
Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u> Da	te: 5/11/16 Well ID: MMWOI7
Task: Groundwater Sampling Field Crew: A. Rettle	y. L. Rodyin
Measuring Point (MP): Wate	
Sampling Method (see applicable calculations below):	Device: Bladder Compression
Low Flow Sampling Minimum Purge = 2^* (feet * vol tubing + vol pump): 4.364 Tubing vol = $0.03L/ft$, Bladder pump vol = $0.5L1$ 2 (54(-034/r) +.5)	
3-Volume Purge Samplir	ng
Total Depth (TD): 5 / ft below MP Water Height (H):	ft below MP Casing Radius (r):ft
Three Purge Volumes = 3*[Pi * r ² * H * 7.48]:	gai Required Run Time:min/ hr g = 1.469gal/ft

		STABI	LIZATION	READING	S			
Water Level (ft below MP)	Purge Rate (gal or ⊔min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
38.68								
8834.95	.05	1 4	11.11	6.49	176.8	6.67	1381	S
38.95	.05	۱ ۰5	11.15	6.85	160.6	6.56	1329	ರಿ
38.95	,04	1.9	11.25	6.84	163.1	6.44	137 8	۵
38.96	-045	2.44	11.22	6.83	165.0	6.37	1378	0
38.90	104	2.9	11.17	6.82	165.1	6.21	1300	D
38.96	•04	3.3	11.06	6.73	166.2	6.26	1380	0
3896	104	3.1	W.90	6.82	161.8	6.23	329	0
38.77	.04	4.0	10.17	6.82	169.4	6.19	1329	0
38.17	.०५	4.4	10.63	6.82	171.2	6.26	1379	٥
	(ft below MP) +/- 0.3 ft 38.95 38.95 38.96 38.96 38.96 38.77 38.77	(ft below MP) (gal or L/min) +/- 0.3 ft	Water Level (ft below MP) Purge Rate (gal or L/min) Cumulative Purge Vol (gal or L) +/- 0.3 ft Low flow ≤ 1L 3-vol = no limit 2 tube vol or 3 well vol 38.95 . 05 1 L 38.95 . 05 1 . 5 38.95 . 04 1, 9 38.96 . 045 2. 49 38.96 . 045 2. 49 38.96 . 04 2. 9 38.96 . 04 3.3 38.96 . 04 3.7 38.77 . 04 4.0 38.77 . 04 4.0 38.77 . 04 4.0	Water Level (ft below MP) Purge Rate (gal or L/min) Cumulative Purge Vol (gal or L) Temp (C) +/- 0.3 ft Low flow ≤ 1L 3-vol = no limit 2 tube vol or 3 well vol +/- 1C 38.95 .08 1 L 11.11 38.95 .05 1 .5 11.15 38.95 .04 1,9 11.25 38.95 .045 2.49 11.22 38.96 .045 2.49 11.17 38.99 .04 3.3 11.06 38.96 .04 3.3 11.06 38.96 .04 3.7 W.90 38.71 .09 4.0 10.17	Water Level (ft below MP) Purge Rate (gal or L/min) Cumulative Purge Vol (gal or L) Temp (C) pH +/- 0.3 ft Low flow ≤ 1L 3-vol = no limit 2 tube vol or 3 well vol +/- 1C +/- 0.1 38.9 5 .08 L	(ft below MP) (gal or L/min) Purge Vol (gal or L) +/- 0.3 ft Low flow \leq 1L \\ 3-vol = no limit 2 tube vol or \\ 3-vol = no limit 3 well vol 4/- 1C 4/- 0.1 4/- 10 38.95	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Water Level (ft below MP) (gal or L/min) Purge Vol (gal or L) +/-0.3 ft Low flow \$1L 2 tube vol or 3 well vol +/-1C +/-0.1 +/-10 +/-0.2 +/-3% ***33.95

	FINAL READINGS												
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	Нq	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)				
1705	38.77	, 04	4,4	10.63	6.82	71.2	6.26	137 2	0				

SAMPLE ID: 1605 GW MMWOIT -	U.F		TIME:	1755	
U U U U U U U U U U U U U U U U U U U	1		 		
Final Low Flow Sampling Settings: PSI:		Charge:	 iec Exhaust:	sec	

			WEEL	ANII LIIVO	, i Oitim	•	Pa	age: <u> </u>		
Project No.:	10509188.0	102 Client: _	P4 Spring	2016	_ Date: _	5/11/16	Well	ID: WWW of	€	
Task: <u>Gro</u>	undwater S	ampling	Field Crew	A. Rel	Hey L	. Doduy	·			
Measuring P	oint (MP):	40C H			Water Le	vel (WL): _	, 846	ft below	<u>MP</u>	
Sampling Me	thod (see app	licable calculati	ions below):	Lon F	low	De	vice: <u>نجاساً</u>	Aler (Corpussor		
				Flow Samp						
Minimum Pu Tubing vol =	rge = 2* (feet * 0.03L/ft, Bladd	vol tubing + vol der pump vol =	ol pump): 0.5L] 2(3º	2019 2 (0.03401)	Star	rting PSI = (½ WL + 20):			
•				e Purge Sa						
Total Depth ((TD):	ft below MP	Water Heigl	ht (H):	ft	below MP C	asing Radiu	s (r):	ft	
Three Purge H= TD-WL,	Volumes = 3* Pi=3.1415, 1ga	[Pi * r ² * H * 7.4 al = 3.785L, 4in	.8]: casing=0.65	3gal/ft, 6in d	casing = 1.	<u>gal</u> Req 469gal/ft	uired Run T	īme:n	nin/ hr	
			STABI	LIZATION	READING	S]
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eħ (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)	
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-voi = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤5	
1032	8.46						•]
1043	8-61	.15	. 1.5	7.51	7.36	161.0	7.13	418	0	Manhul to
105 3	8.62	# l	22.6	8.50	7.32	161.8	7.64	418	D	tigute discher fitting, Do
1103	8.63	હાઈ	3.75	7.26	7.31	162.5	7.15	420	<u>ට</u>	who have ha
1113	8.66	.1	4.0	7.21	7.28	163.7	2.04	420	ی	Member to
1123	8.65	٠١	\$.0	7.64	7.29	160.4	1.03	419	0	rang down
										-
										-
	•									-
										-
Continue stab	 llization readings	 s on additional pa	l ages if necessa	lry	L				ř.	<u> </u>
							· · · · · · · · · · · · · · · · · · ·			ecej
	1	T	F	INAL REAI	DINGS	I	1			-
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTŪ)	
1123	8.65	١,٠	5.0	1.64	7.29	160.4	7.03	419	O	
SAMPLEID	· 1605/2	J MM WO 18	, U.F. MS	.\$05		7	IME:	U25		
				Charge:		ec Exhaust:		sec		
rinal Low H	ow Sampling S	settings: PSI: _		лыуе. <u></u>	<u> </u>	<u>so</u> Exhaust.		300		

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oject No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/15/16 Well ID: MWWOZO
sk: Groundwater Sampling Field Crew: A Pet-Au, 7. 035000
easuring Point (MP): TOCN Water Level (WL): 274.25 ft below MP
impling Method (see applicable calculations below): Lowflow Device: Bladles / Wittogen
Low Flow Sampling
nimum Purge = 2^* (feet * vol tubing + vol pump): $25.5 L$ Starting PSI = (½ WL + 20):
Tube Lensth 403 3-Volume Purge Sampling
otal Depth (TD): 408 ft below MP Water Height (H): ft below MP Casing Radius (r): ft
rree Purge Volumes = 3*[Pi * r² * H * 7.48]:min/ hr - TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft

			STABI	LIZATION	READING	S	ţ		
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or(L)>	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1010	274.25	exiscens _s	2	8.10	7.41	187.1	9.39	1410	83.4
1020	274.25	· magain.	4	8.35	7.03	1186.6	6.69	836	3.5
1030	274.25	4/22	8,5	8,63	6.96	185,4	1.48	920	2.8
1040	274,24		13	8.60	6.96	180.7	0.71-	917	2.2
1050	274.24		23	8.71	6.96	176.9	0,45	913	1.60
1100	274.24	***	31.5	8.72	6,96	173.5		905	1.4
1110	274.24	-	41.5	8.71	6.96	172.1	0.22	903	1.8
								,	
Continue stabi	l Ilization readings	l s on additional pa	l iges if necessai	гу				l	

	FINAL READINGS									
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)	
1120	274.25		49.5	8.77	6.96	164.7	0.20	899	0.8	

SAMPLE ID: 1005 GWMMW 02	0-FU	TIME:	1120
Final Low Flow Sampling Settings: PSI: 165	,	sec Exhaust: 27	sec

Page: ____ of ____

Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u> D	ate:
Task: Groundwater Sampling Field Crew: A. Pettl Measuring Point (MP): Toc H Wa	ey L. Ralizer
Measuring Point (MP): Toc H Wa	iter Level (WL): 209.92' ft below MP
Sampling Method (see applicable calculations below): Low Flo	
Low Flow Sampling	·
Minimum Purge = 2^* (feet * vol tubing + vol pump): 15.5^{\perp} Tubing vol = 0.03 L/ft, Bladder pump vol = 0.5 L] $2(242^{\circ}(0.3\%) *0.00)$	្ស Starting PSI = (½ WL + 20):
3-Volume Purge Sampl	ing
Total Depth (TD):ft below MP Water Height (H):	ft below MP Casing Radius (r):ft
Three Purge Volumes = 3*[Pi * r² * H * 7.48]:	gal_Required Run Time:min/ hr g = 1.469gal/ft

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1242	210.03	, 25 4 min	26	8.24	7.27	127	O	622	0
1252	210.11	.3 4/m	MASL	8.59	7.21	131.5	6.37	631	0
1302	210.11	25 /nn	86	9.21	7.20	129.5	6.21	(e30	0
1312	21012	34/ Aire	114	9.15	7.20	130.2	6.21	630	0
1322	210.12	. 3 4 min	144	895	7.19	132.3	6.22	628	0
1332	210.12	.34mm	NL	9.35	7.20	133.5	6.20	028	0
1337	210.12	, 34/mm	18.54	8.99	7.20	134,4	6.22	627	0
1342	210.12	37m	20-	9.52	7.19	137.3	6.16	625	0
		`							
Continue stabi	ilization readings	on additional pa	iges if necessa	гу					

	FINAL READINGS										
Time (24 Hr)	Water Level (fl below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)		
1342	210.12	.34/min	201	9.52	7.19	133.3	6.16	625	0		

SAMPLE ID: 1605 GWMM WOZI-U, F TIME: 1342

Final Low Flow Sampling Settings: PSI: 120 Charge: 11 sec Exhaust: 21 sec

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Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/12/6 Well ID: Mww 022
Task: Groundwater Sampling Field Crew: A. Petting, L. Rody
Task: Groundwater Sampling Field Crew: A. Petthy, L. Podyje Measuring Point (MP): 700 (H) Water Level (WL): 201.95 ft below MP
Sampling Method (see applicable calculations below): Low Thow Device: Bladle / Low Thow
Low Flow Sampling
Minimum Purge = 2* (feet * vol tubing + vol pump): 20らし Starting PSI = (½ WL + 20): Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L] 2(325(0)1/ft) という
3-Volume Purge Sampling
Total Depth (TD):ft <u>below MP</u> Water Height (H):ft <u>ft below MP</u> Casing Radius (r):ft
Three Purge Volumes = 3*[Pi * r² * H * 7.48]:min/ hr H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft

			STAB	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L.)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1347	201.95	4018							
1400	202.08	.25	.75	10.45	7.18	100.2	9.10	180	0
1410	202.05	.25	3.25	10.60	7.27	112.7	5.58	४१७	0
1420	202.13	.25	5.75	9.98	7.08	119.9	3.99	924	0
1440	202.15	.25	8.25	9.81	7.09	129.3	4.27	933	4.2
1450	202.13	.25	10.5	9.72	7.09	132.6	4.27	929	2.6
1500	202.13	.25	12.75	10.05	7.10	135.9	4,28	924	م) ، رہ
1510	202.16	,25	15.25	9.81	1,10	139.7	4.30	925	0.7
1520	202.11	.25	17.75	4.82	7.10	1436	4.32	431	0
1530	202.10	.25	20.25	9.69	7,10	147.2	4.36	925	٥
1535	202.11	.25	21.5	4.45	7.10	149.7	4.33	925	1.3

	FINAL READINGS										
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)		
1535	202.11	. 25	21.5	9.45	7-10	1497	4,33	125	13		

 SAMPLE ID: 1005 GWMMWD22-U, F
 TIME: 1535

 Final Low Flow Sampling Settings: PSI: 110
 Charge: 8 sec Exhaust: 25 sec

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Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u> Date	e: 5/12/16 Well ID: MMW023
Task: Groundwater Sampling Field Crew: A. Pattley	
Measuring Point (MP): To C N Wate	er Level (WL): 106-60 ft below MP
Sampling Method (see applicable calculations below):	Device: Bladdor/Conpussion
Low Flow Sampling	, ,
Minimum Purge = 2* (feet * vol tubing + vol pump): 22.1 1 Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L] 2(362(.03/61)4.54)	Starting PSI = (½ WL + 20):
3-Volume Purge Sampling	g
Total Depth (TD):ft below MP Water Height (H):	ft below MP Casing Radius (r):ft
Three Purge Volumes = 3*[Pi * r ² * H * 7.48]: H= TD-W/	gal Required Run Time:min/ hr

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
6943	106.60								
0955	106.60	.85	23.04	9.26	6.90	-95.9	0.36	474	0
1005	106.60	.45	11.5	9.14	6.93	-105.2	0.07	926	0
1015	106.61	.85	20.0	914	6.98	-111.2	0.03	996	0
1020	106.62	.85	24.25	9.18	6.99	-108.5	0.03	পণ্ড	0
1025	106.62	,85	28.5	9.16	6.29	-113.3	.02	983	٥
Continue stabi	 ilization readings	s on additional pa	nes if necessa	rv	ł				

	FINAL READINGS									
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gat or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)	
1025	106.62	•85	28.5	9.16	6.99	-113.3	.02	483	ပ	

SAMPLE ID:	1605 GWMMW023	5 - UTF			TI	ME:	1025	
Final Low Flow	Sampling Settings: PSI:	90	Charge:	10	sec Exhaust:	10	sec	

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Project No.:	10509188.0	102 Client: _	P4 Spring	2016	_ Date: _	5/14/16	Well I	D: MMW 02	4
rask: <u>Gro</u>	undwater S	ampling	Field Crew	A. Re	they L	Rodgi			·
Measuring P	oint (MP):	OC H			_ Water Le	evel (WL): _೨	54.19	ft below	<u>MP</u>
Sampling Me	thod (see app	licable calculati	ons below):	Low F	=tw	De	vice: Blad	eler/Comp	2500
				Flow Samp				, 0	
Minimum Pur Fubing vol =	rge = 2* (feet * 0.03L/ft, Bladd	' vol tubing + vo der pump vol =	ol pump):	1.7 6	Sta	rting PSI = (½ WL + 20):	<u></u>	
			-	e Purge Sa	•				
fotal Depth (TD):	ft below MP	Water Heig	ht (H):	fi	<u>below MP</u> C	asing Radius	s (r):	ft
		[Pi * r ² * H * 7.4 al = 3.785L, 4in							
			STAB	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low ftow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1353	54.191								
1402	54.35	6	2-5	8,61	7.2(143.9	2.72	933	0
1407	54.30	٧,٧	6.5	8.49	7.08	148.5	2.41	1018	0
1412	54.29	,75	10.25	8.23	7,07	150.2	2.31	1025	6
1417	54.29	.25	141.0	8.57	7.07	152,1	2.30	1020	0
									-
continue stabi	lization readings	s on additional pa	ges if necessa	у					
			F	INAL REAL	DINGS				
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1417	54.29	.75	14.0	8.07	1.07	152-1	2.30	1024	0
	,	ンドへいらてず Settings: PSI:_		harge:I	1 se	T	IME: \4	sec	, ,,,,,,,,

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F1m0111
Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u> Date: \$/09/16 Well ID: MMWo25
Task: Groundwater Sampling Field Crew: A. Pottley L. Zodriguez
Measuring Point (MP): 100 & well (assim) Water Level (WL): 27.30 ft below MP
Sampling Method (see applicable calculations below): Device: Bladler / Regular / Nitry
Low Flow Sampling
Minimum Purge = 2* (feet * vol tubing + vol pump): Starting PSI = (½ WL + 20): Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L]
3-Volume Purge Sampling
Total Depth (TD): 200 ft below MP Water Height (H): 172.7 ft below MP Casing Radius (r): 5.167 ft
Three Purge Volumes = $3*[Pi*r^2*H*7.48]$:min/ hr H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤(L) 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1527	27.5								
1620	33.6	۲.1	~•	7.88	7.61	12/20	1.19	299	0
1630	36.3	ن ٦		7.68	7.82	120.6	1.0%	299	0
1640	39.00	.7		1.60	7.88	115,6	1.07	298	Q
	Lapt	to puze	. on 8	19/16	Re	tuni S	14/16	Far sy	sling
1145	38.64	Q .						, , , , , , , , , , , , , , , , , , ,	
1208	39-17	. 2	· 6	W.04	1.87	128.7	3.66	2.88	0
1210	39.69	0.2	2.5	4.29	7.89	129.9	(, 57	291	0
1215	40.16	0.2	3.5	9.88	7.92	129.0	1.28	289	0
1220	40.10	6.2	4.5	9.13	7.94	128.1	1.22	290	0
1225	40.10	0.2	5.5	9.88	7.95	128.3	1.16	289	0
Continue stab	lization reading	s on additional pa	ges if necessa	гу					

FINAL READINGS										
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)	
1225	4010	6.2	5.5	7.88	7.95	128.3	116	279	D	

SAMPLE ID: 1605GWMW 02	5-U,F		TIME:	1223	
Final Low Flow Sampling Settings: PSI:	100	Charge: L 0	sec Exhaust: 14	sec	

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oject No.: 10509188.0102 Client: P4 Spring 2016 Date: אויס בים Well ID: אויס אבים של אויס בים Date: בים של היס אויס בים של היס בים בים של היס בים של היס בים של היס בים בים של היס בים
sk: Groundwater Sampling Field Crew: A petitler, L. Rodrym
easuring Point (MP): TOC H Water Level (WL): 284.65 'ft below MP
mpling Method (see applicable calculations below): Low Flow Device: Blodde / Hufuyeu
Low Flow Sampling
nimum Purge = 2* (feet * vol tubing + vol pump): 21.7 ב bing vol = 0.03L/ft, Bladder pump vol = 0.5L] 2(פאז (סיס) ארני) Starting PSI = (½ WL + 20):
3-Volume Purge Sampling
tal Depth (TD):ft below MP Water Height (H):ft below MP Casing Radius (r):ft
ree Purge Volumes = 3*[Pi * r ² * H * 7.48]:min/ hr - TD-W/ Pi=3 1415 1gal = 3.785L 4in casing=0.653gal/ft. 6in casing = 1.469gal/ft

			STAB	LIZATION	READING	S	1		
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity [·] (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/~ 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1037	284.7		2.75	9,13	7.30	-6.Y	0.38	429	-0.2-
1047	284.7	.65 /mm	4.25	10-17	7.46	12.1	20.0	429	-27
1057	284.7	.65 /mm	18.75	10.19	7.47	27.0	0.01	428	~0,9
1107	284.7	.65 1/min	22.25	10.02	7.47	36.1	0,01	4128	-0,9
11 12	284.7	.65 /nin	26.5	10.03	7,~17	34.2	0.03	428	-0.q
1117	284.7	.65 /min	28.75	10.01	7.47	41.9	0.03	428	-0.9
1122	284.7	.65 1 min	32.0	9.89	7.46	45.4	٥٠٥٠١	427	-0.9
1127	284.7	.65 /Ain	35.25	9.78	7.46	48.6	0.05	427	. 0.9
	-								
									<u> </u>
		s on additional pa							

FINAL READINGS										
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)	
1127	284.7	.65 1/mm	35.25	4.18	7.46	48.6	0.05	427	0	

 SAMPLE ID: 1605 MMw 0 26 - U F
 TIME: 127

 Final Low Flow Sampling Settings: PSI: 205
 Charge: ZO sec Exhaust: 25 sec

Dounload Tim down

Page: ____l__of___/__

Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/17/16 Well ID: MWW 627										
Task: Groundwater Sampling Field Crew: A Pottley L Rodwig										
Measuring Point (MP): 10C H Water Level (WL): 91.69' ft below MP										
Sampling Method (see applicable calculations below): Low Flow Device: Blubby Corpuss										
Low Flow Sampling										
Minimum Purge = 2* (feet * vol tubing + vol pump): Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L] フレルシャン										
3-Volume Purge Sampling										
Total Depth (TD):ft below MP										
Three Purge Volumes = 3*[Pi * r² * H * 7.48]:min/ hr										

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1204	91.69			४.५५	1.75	91.3	4.29	1101	-
1215	91.75	.55	2.5	જિ.નવ	7.25	91.3	4.29	1101	0
1220	91.75	-55	4.0	8.27	7.10	98.1	3.33	1116	0
1225	91.75	.55	675	8.17	7.08	100.4	3.15	1118	P
1230	91.75	•45	9.50	8.07	7.07	102.4	3.12	1117	ڻ ع
1235	91.15	•85	12.25	8.34	7.07	104.9	3.09	1115	0
			No. 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,						
									···
O1: of-L:	lication condition	on additional pa	ann if nannan				1		

FINAL READINGS										
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)	
1235	91.75	.55	12.25	8.34	7.07	104.9	3,09	1115	O	

SAMPLE ID:	1605 GWMWW 02		TIME:					
Final Low Flow	Sompling Sottings: DSI:	10	Charge:	10	eec Evhaust	15	500	

Dourland tamber

		"				Pag	ge: <u> </u>	
Project No.: <u>10509</u>	188.0102 Clie	ent: <u>P4 Spring</u>	2016	Date: _	5/12/14	Well II	: <u>K KW 0</u> 2	<u></u>
Task: <u>Groundw</u>	ater Sampling	Field Crev	v: A Re	ttex	(LPD	dzi		
Measuring Point (MF								
Sampling Method (s	ee applicable cal	lculations below):	Low	flow	De	vice: <u>آگا</u>	ras) relat	mssan
Minimum Purge = 2* Tubing vol = 0.03L/fi	(feet * vol tubing , Bladder pump	g + vol pump): _ vol = 0.5L] 2 (Sta	rting PSI = (½	≨ WL + 20): _.		
		3-Volui	ne Purge Sa	mpling				
Total Depth (TD):	ft belov	<u>« MP</u> Water Hei	ght (H):	fi	below MP Ca	asing Radius	(r):	ft
Three Purge Volume H= TD-WL, Pi=3.14						uired Run Tìr	me:	min/ hr
		STA	BILIZATION	READING	S			
			_		ODD/FL	DO.	Canalin	Turbidity

			STABI	LIZATION	READING	S	·		
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or ⊔/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1224	63.96								
1235	63.90	.75	1.5	8.64	7.73	83.3	1.03	568	0
1240	63.90	. 8	5.5	8.46	7.53	92.6	6.96	568	0
1246	63.94	18	9.5	8.42	1.52	95.7	6.95	566	0
1250	6394			8.72	1.53	98.0	6,90	565	٥
1255	63.76	.25	12.25	8.35	7,53	101,2	6.88	565	0

		s on additional pa				1		<u> </u>	

	FINAL READINGS											
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)			
1255	63.96	-75	(2.25	8.35	1.53	101.2	6.88	565	0			

SAMPLE ID: Laos GMALLAM	TIME: 1255, 1210
16056WMMW028-1,2-U,F	
Final Low Flow Sampling Settings: PSI: Charge:	

Page: ____ of ___

Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u>	Date: S/II/16 Well ID: MMW 024
Took: Groundwater Sampling Field Crow: A. Q.	Hay I Dodrin
Measuring Point (MP): 40 C H	Water Level (WL): 13.46 ft below MP
Sampling Method (see applicable calculations below):Low	Flow Device: Bladdy Corpussion
Low Flow Sample	ing
Minimum Purge = 2^* (feet * vol tubing + vol pump): $\frac{4.3 L}{55^* (0.03^*/\epsilon_1)}$	Starting PSI = (½ WL + 20):
3-Volume Purge Sa	mpling
Total Depth (TD):ft below MP Water Height (H):	ft below MP Casing Radius (r):ft
Three Purge Volumes = 3*[Pi * r ² * H * 7.48]:	

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (fl below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	. ≤5
1213	13.46								
1220	13.64	0.7	2.25	8.07	7.17	163.8	5.28	1556	۵
(225	13.65	0.45	4.5	8.07	7.10	165.1	6.27	1858	0
1230	13.44	6.45	6.75	8.13	7.03	166.9	6-79	1557	0
1235	13-64	0.40	8.75	8.13	6.98	169.2	7.041	1560	0
1240	13.64	0.40	10.75	4.04	6.97	175.4	7.18	1560	٥
1245	13.44	0.40	12.15	8.10	6.95	171.9	7.25	1560	0
1250	13.64	0.40	14.75	8.12	6.94	124.(7.29	1562	0
	`								
0 11		s on additional pa	and if names						

2.1.4.	FINAL READINGS										
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)		
1250	13.64	0.40	14.75	8.12	6.94	174.1	1.29	1562	Ö		

SAMPLEID: 1605 GW MMW02	9 -0,			TIME: 1250	
Final Low Flow Sampling Settings: PSI:	^	Charge:	7	sec Exhaust: \ \ \ <u>sec</u>	

- Danholy turker

1 age0
Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/10/16 Well ID: MWW 030 Task: Groundwater Sampling Field Crew: A. Pettley, L. TZodryw Measuring Point (MP): TOL H Water Level (WL): 2190' ft below MP
Measuring Point (MP): 700 H Water Level (WL): 21,90 ft below MP
Sampling Method (see applicable calculations below): Purpe and Sample Device: 73/40/der/Commercial Blodder/Lutyrum
Minimum Purge = 2^* (feet * vol tubing + vol pump): Starting PSI = ($\frac{10 \cdot 3}{2}$ L Starting PSI = ($\frac{12}{2}$ WL + 20):
3-Volume Purge Sampling
Total Depth (TD): 155 ft below MP Water Height (H): ft below MP Casing Radius (r): ft
Three Purge Volumes = $3*[Pi*r^2*H*7.48]$: gal Required Run Time: min/ hr H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft
OTA DILITATION DE ADIMOS

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or(L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1707	21.90								
1720	22.85	1.0 /MIN	2.5	8.83	7.62	66.8		413	0
1725	25.43	1.0 7min	7.5	४.५४	1.62	65.3	0.93	416	0
1745	35.15	1.0 7 min	27.5	8.45	7.60	65.1	0.73	416	0
1200	41.4	1.04mm	32.5	8-42	1.60	73.9	1.71	416	0,4
96611815	Tream	in mita	non bot	the of	well	ist to p	uze ove	might 4	
0840	143.02	well:		ry dum	is the		1 11.	recharge 5	love som
1310	29.11		ras rece	Send	10	780% :	s tarted	Samplan	<u> </u>
1320	29.60	-	· 75	8.46	7.80	145.8	4.62	410	1-3
1325	30.40	E CANADA MA	2.5	8.36	7.75	145.2	2,55	407	4.2
1335	30.93	-	4	8.64	7.72	143,3	2.50	405	0.1
			10						
Continue stabi	ilization readings	s on additional pa	iges if necessa	гу					

FINAL READINGS										
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рH	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)	
1340	33,00		10	8.72	7.72	142.5	2.53	405	D	

Downloaded Translocer and Bonatha

5/15/16

	WELL S	AMPLING	FORM	·			
					Ра	ge: ' of _	
Project No.: <u>10509188.0102</u> Client: <u>F</u>	P4 Spring 2	2016	_ Date: _	5/13/16	Well I	D: MMUS 31	
Task: Groundwater Sampling	Field Crew:	A Pet	they L	· Rodnj			
Measuring Point (MP): てゅく(ル)			Water Le	evel (WL): _	97.631	ft below	MP
Sampling Method (see applicable calculation	ns below): _	Lew-	Fton	De	vice: <u>Blee</u>	der (Corps	neen
		Flow Samp					7
Minimum Purge = 2* (feet * vol tubing + vol Tubing vol = 0.03L/ft, Bladder pump vol = 0.	pump): .5L] <u>2</u> (1 %	127L	Stai (۱.۶۰)	ting PSI = (½ WL + 20):		
		e Purge Sa					
Total Depth (TD): ft below MP	Water Heigh	nt (H):	<u>ft</u>	below MP C	asing Radius	s (r):	ft
Three Purge Volumes = 3*[Pi * r² * H * 7.48] H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in c]: casing=0.653	3gal/ft, 6in d	casing = 1.	<u>gal</u> Req 469gal/ft	uired Run Ti	me:n	nin/ hr
	STABI	LIZATION	READING	S			
	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit +/- 0.3 ft Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1637 97.43							
	2.54	9.99	1.89	114.6	9.03	265	S
1845 97.83 0.85	6.0	9.24	7.82	N9.7	4-35	263	0
1650 97.83 .25	9.75	9.56	7.82	123.3	9.41	261	0
1655 97.83 .70	Wit 5	9.62	7.81	127	9.47	260	0
1700 97.83 .85	16.00	9-57	7.82	128	4.37	260	0
Continue stabilization readings on additional page	es if necessar	у			l		
					•		
	. F1	INAL REAI	DINGS		T		
	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1700 97.83 D.85 1	6.00	4.57	7.82	128	9.37	260	0
SAMPLEID: 1605 GW MMW 031	~U, F			T	IME: \	700	

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Page: 1 of 2

K	Project No.:	10509188.0	1 <u>02</u> Client: _	P4 Spring	2016	_ Date: _	5/11/16) Well I	D:MMW 1	332
	Task: Gro	undwater S	ampling	_ Field Crew	£.4	etter	L-12	-odiz	2	
	Measuring P	oint (MP):	TOC N	_	•	Water Le	evel (WL):	18.25	fl below	MP
			licable calculat							
	Sampling Me	anod (see app	iloabic calculat		Flow Samp		<u></u> 50	¥100. <u></u>	, F	
			vol tubing + vo			-	505 44	(14# 05)		
•	Minimum Put Tubing vol =	rge = 2* (feet * 0.03L/ft, Bladd	vol tubing + vol ler pump vol =	ol pump): 0.5L]		Sta	rting PSI = ()	∕₂ WL + 20):		
				3-Volum	e Purge Sa	ampling				
	Total Depth (TD): 66	ft below MP	Water Heig	ht (H):	ft	below MP Ca	asing Radius	s (r):	ft
	Three Purge	Volumes = 3*[:Pi * r ² * H * 7.4 al = 3.785L, 4ir	18]:	- 110 -1		gal Requ	uired Run Ti	me:r	min/ hr
	H= TD-WL,	P⊫3.1415, 1ga	al = 3.785L, 4ir	n casing=0.65	3gal/π, 6in i	casing = 1.	469gal/π			
				STABI	LIZATION	READING	S			
	Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Amin)	Cumulative Purge Vol (gal or ©	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
	Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
	090 3	18.25								
	6915	20.45	1.75	41	6.40	7.68	164.4	6-22	383	D
	0925	27.91	2.25	24.5	6.25	7.36	157-9	6.39	379	0
	0935	37.05	2,25	47.0	6.28	7.50	1204	671	378	0
	0945	46.02	2.25	69.5	6.23	7.53	W8.2	6.17	378	D
	0955	53.45	2.0	89.5	6.25	7.54	1497	6.77	37%	D
	1005	58.85	1.25	192.0	6.20	7.55	150.5	6.29	380	0
	1014	60.84	v.low	113.25	6.3	7-51	151.7	657	3 7 7	O
. ا نوم	1016	Allowin	to necly	e fun	fur,	و سرح	Ln			
5/15/16	· 0855	16.55		.75	6.21	796	2 10.4	7.26	389	.3
	0900	19.30	.75	5.75	6.16	7.25	200.2	6.84	386	Ø
	0905	21.00	.75	10.25	6.14	7.31	195,5	(e.8)	383	10.2
	Continue stabi	lization readings	on additional pa	iges if necessa	ry					
I		· · · · · · · · · · · · · · · · · · ·			INAL REAL	DINGS			······································	

			F	INAL REAI	DINGS				
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
0915	72.80	.75	15.0	6.13	7.36	190.2	7,06	382	D

SAMPLE ID: 16056W MM	W037	<u>'-F,1</u>	<u>ا</u>	TIM	E: <u> </u>	1915	
Final Low Flow Sampling Settings: PSI:	30	Charge:	9	sec Exhaust:	10	sec	

No Transducer

WELL SAMPLING FORM Continued Stabilization Readings

Page: 2 of **2**

Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/15/16 Well ID: MMW 03Z

			STABI	LIZATION	READING	s	·		
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤5
0915	72.80	ં]ર્ડ	15.0	6.13	7.36	190.2	7.06	382	Ø
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Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/11/16 Well ID: Mwo33
Task: Groundwater Sampling Field Crew: 12. Fettley (2. Fettley)
Task: Groundwater Sampling Field Crew: A. Pettley, L. Podvijus Measuring Point (MP): 70 C N Water Level (WL): 6.29 ' ft below MP
Sampling Method (see applicable calculations below): 3 Valum Purpe Device: Bladder Purp/Longuisser
Low Fiow Sampling
Minimum Purge = 2* (feet * vol tubing + vol pump): 10 L Starting PSI = (½ WL + 20): Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L] 2.(150*(.03)+.5)
3-Volume Purge Sampling
Total Depth (TD): 156
Three Purge Volumes = 3*[Pi * r² * H * 7.48]: 282.55 gal Required Run Time:min/ hr H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft H=150-6.24 = 143.71' 3v = 3.(M(.167)*(7.48))(143.71) = 9446 282.85 L

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1305	6.29								
1315	9.02	1.5 min	15L	8,90	6.96	178.1	8	473	0
1325	13.96	1.5 1/mm	30L	6.66	1,19	78.0	0.23	413	0
1335	16.55	1.5 7mm	456	6.57	7.79	63.1	D	472	D
1345	19.15	1.5 /ni-	604	6.63	7.76	46,7	0	469	0
1355	22.17	1.5 1/mm	15 L	6.66	7.74	41.1	0	464	O
1405	24.32	1.5 min	90L	6.65	7.71	47.6	.03	405	0
1415	26.266	1.5 Ymin	105 L	6.66	7.10	49.2	0.05	465	٥
							[

	FINAL READINGS												
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Voi (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)				
1415	26-24	1-5 1/m	1054	6.06	7.70	49.2	0.05	465	\mathcal{O}				

SAMPLEID: 1605 GW MMW037	-V,F			Т	IME:	1915	
First Law Compling Cottings: DSI:	75	Chargo:	23	coc Evhauet	1.0	sec	

No Transdour

A See comment on Field notebook partaing to supply hather.

			VVELLS	WINLTHAC	FORW		Pa	age:tof				
Project No.:	10509188.0	102 Client: _	P4 Spring	2016	_ Date: _	6/14/16	Well I	D: MMW 6 7	<u> 4</u>			
		ampling										
Measuring Po	oint (MP):	THE TOC	(14)		Water Le	evel (WL):	7.0	i ft below	MP			
Sampling Me	thod (see app	licable calculat	ions below):	Jou-	Hou) De	evice: Z	adder /(c	24G2881			
, 3				Flow Samı			()	/ -	V			
Minimum Put Tubing vol =	rge = 2* (feet * 0.03L/ft, Bladd	vol tubing + vo der pump vol =	ol pump): 0.5L] 24	0.02 L	Sta St <u>\</u>	rting PSI = (½ WL + 20):					
				e Purge Sa								
Total Depth (TD):	ft below MP	Water Heigi	ht (H):	<u>ft</u>	below MP C	asing Radiu	s (r):	ft			
Three Purge H= TD-WL,	Three Purge Volumes = 3*[Pi * r² * H * 7.48]:mln/ hr H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft											
			STABI	LIZATION	READING	S						
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gat or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pH	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)			
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5			
1501	7.10											
1505	7.25	.35	1.75	7.79	6.41	172.1	8.76	680	0			
1510	7.30	. 35	3.5	7.79	6.91	172.1	8.76	680	0			
1515	7.30	0.35	6.25	7.79	6.91	172.1	8.76	080	٥			
1520	7.30	0.35	7.0	7.79	6.91	172.1	8.76	680	0			
1525	7.30	0.35	8.75	8.41	7.3-1	1560	8.99	558	0			
1530	7.30	0.35	10.50	४७८	7.35	157.5	9.14	558	ひ			
V5 35	7.31	0.35	12.25	8.28	7.35	159.5	9.46	556	0.7			
1540	7.31	0.35	14.0	8.30	7.36	161.6	9.32	553	0			
1545	7.31	0.35	15.25	8.12	7.36	164.6	9.51	554	0			
				-								
Continue stabi	lization readings	s on additional pa	iges if necessa	ry								
			F	INAL REA	DINGS		***************************************					
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)			
1545	7.31	0.35	15.75	8.12	7.36	164.6	9.51	554	0			
SAMPLE ID:	Delicit DES	1 1605 GWM	MW034-1	2,-F,L)	7	ΓΙΜΕ:	,1500				

Final Low Flow Sampling Settings: PSI: _____ Charge: _____ sec Exhaust: ____ sec

			WELL S	AMPLING	FORM		Pa	ge: of _	t
Project No.:	<u>10509188.0</u>	102 Client: _	P4 Spring	2016	_ Date: _	5/13//	o Well II	D: WWMQ (35
Task: <u>Gro</u>	undwater Sa	ampling	Field Crew:	A. Re	they,	L Rodi	-		
Measuring Po	oint (MP): <u>1</u>	ampling の~ (八)			_ Water Le	evel (WL): _C	15,81	ft below	<u>MP</u>
Sampling Me	thod (see app	licable calculati	ions below): _	Low -	Flow	De	vice: [Hal	der/con	presu
				Flow Samp					
Minimum Pur Tubing vol =	rge = 2* (feet * 0.03L/ft, Bladd	vol tubing + vol ler pump vol =		13.34 55 (.0374) e Purge Sa		rting PSI = (1	½ WL + 20):		
Total Depth (TD):	ft below MP	Water Heigl	nt (H):	<u>f</u> 1	below MP Ca	asing Radius	s (r):	ft
Three Purge H= TD-WL, I	Volumes = 3*[Pi=3.1415, 1ga	Pi * r ² * H * 7.4 al = 3.785L, 4in	8]: casing=0.65	3gai/ft, 6in d	casing = 1.	<u>gal</u> Req 469gal/ft	uired Run Ti	me:r	min/ hṛ
			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1245	42.81	148							
1250	92.08	.45	2.5	8,30	7.03	108.4	1.83	1444	0
1255	92.88	·-15	4.15	8.20	6.96	(11-5	2.10	1459	0.2

(24 Hr)	(ft below MP)	(gal or L/min)	Purge Vol (gal or L)	(C)	·	(mv)	(mg/L)	Conductivity (µS/cm)	(NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1245	42.81	, 428°							
1250	92.08	.45	2.5	8,30	7.03	10४.4	1.83	1444	0
1255	92.88	کا ⁻ ،	4.15	8.20	6.96	(11-5	2.10	1459	0.2
1300	12.87	.45	7.0	8.17	6.95	115.2	2.10	1458	D
1305	92.65	.45	4.25	8.30	(0.95	16.9	2.08	1456	0
1310	92.81	.45	11.5	8.29	6.95	118.7	2.08	1456	O
1315	92.67	.45	13.75	8.29	6.98	1203	2.06	1456	0
Continue stab	ilization reading:	s on additional pa	ages if necessa	ry					

	FINAL READINGS											
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Umin)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)			
1315	92.87	.45	13.75	8.29	6.95	120.3	2.06	14.56	0			

SAMPLE ID: WOSGW MMW 038	TIME: 1315				
Final Low Flow Sampling Settings: PSI:	00 Charge: 9	sec Exhaust:(/	<u>sec</u>		

Doundell Trusdene

Page: \ of \

Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u>	Date: <u>\$/13/16</u> Well ID: <u>Mw 03/0</u>
Task: Groundwater Sampling Field Crew: 🛆 . 🔫	
Measuring Point (MP): COC (N)	·
Sampling Method (see applicable calculations below):	F6W Device:
Low Flow Samp	ling
Minimum Purge = 2* (feet * vol tubing + vol pump): 9. 6 L Fubing vol = 0.03L/ft, Bladder pump vol = 0.5L] 2047 C-07/F	Starting PSI = (½ WL + 20):
3-Volume Purge Sa	mpling
Total Depth (TD):ft below MP Water Height (H):	ft below MP Casing Radius (r):ft
Three Purge Volumes = 3*(Pi * r ² * H * 7.48):	gal Required Run Time:min/ hr

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
HEF 1511	112.63								
1515	112.08	.35	5	10.20	1.66	136.7	8.66	424	0
1520	112.63	.35	3.25	9.37	7.57	137.4	7.90	424	0
1525	112.63	.35	5.0	9.04	752	140.0	7.54	423	0
1530	112.63	. 35	6.15	9.03	7.52	141.3	7.46	422	70
1535	112.63	٠٠	8.15	8.29	7.52	141.8	7.42	422	0
1540	112.66	. 4	10.75	9,00	7.52	142.2	1.51	421	ن
							1		
		on additional pa							

	FINAL READINGS											
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)			
1540	112.66	0.4	10.25	900	7.52	142.2	7.51	421	0			

____ TIME: 1540 SAMPLE ID: 1605 GW MMW 034

Final Low Flow Sampling Settings: PSI: 90 Charge: 7 sec Exhaust: 20 sec

I saves w/ bladder pump causing lats of bubbles to come out of bond;

Settlig on Do sensor on sonde. High Do Madings.

Downloded Transdours, MS/MSD

WEL	LS	AMI	PLIN	lG	FOR	MS

	Page: of \
	5/13/16
Project No.: <u>10509188.0102</u> Client: <u>P4 Spring 2016</u> Dat	e: OTE Well ID: MMWO'S I
Task: Groundwater Sampling Field Crew: <u>ム. Pett C</u>	cy L Rodrig
Measuring Point (MP): <u> </u>	er Level (WL): 113.30 ft below MP
Sampling Method (see applicable calculations below):	Low Device:
Low Flow Sampling	
Minimum Purge = 2* (feet * vol tubing + vol pump): 20.(L Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L]	Starting PSI = (1/2 WL + 20):
3-Volume Purge Samplin	g
Total Depth (TD):ft below MP Water Height (H):	ft below MP Casing Radius (r):ft
Three Purge Volumes = 3*[Pi * r² * H * 7.48]: H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing	gal Required Run Time:min/ hr = 1.469gal/ft

			STAB	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	. +/- 10	+/- 0.2	+/- 3%	≤ 5
1355	(13.30								
1410	113.35	0.4	2.0	9.71	7.57	10-1.5	5.66	436	0
1420	113.35	7.0	6.0	9.63	7.52	114.1	7.57	4135	0
1430	113.35	0.4	10.0	9.53	1.52	120.6	7-60	434	0
1440	113.35	0.4	141.0	9.64	7.51	128,0	7.77	432	0
1450	113.35	0.4	0,81	9.83	1.51	133.1	7.74	430	٥
1500	113.75	0,35	21.5	9.60	7.51	137%	7.76	428	<u>D</u>
			1.000						
		on additional pa							

	FINAL READINGS											
Time (24 Hr)	Water Level (ft below MP)	Purge Rato (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)			
1500	(13.55	0.35	21.5	9.60	7.51	137.8	7.76	428	0			

SAMPLEID: 1605GWMNW 037	-1,2-1	٦,۴	TIME:	1500	1410
Final Low Flow Sampling Settings: PSI:	150	Charge: 16	sec Exhaust:\ 7	<u>sec</u>	•

⁻ Deplocate - Tradum Downlaloh

WELL SAMPLING FORM Page: of
Project No.: 10509188.0102 Client: P4 Spring 2016 Date: 5/15/16 Well ID: MW-15A
Task: Groundwater Sampling Field Crew: A. Pettley T. Osboan
Measuring Point (MP): TOLN Water Level (WL): 18-34 ft below MP
Sampling Method (see applicable calculations below): Low Flow Device: Parastatic
Low Flow Sampling
Minimum Purge = 2^* (feet * vol tubing + vol pump): $3 \cdot 2$ Starting PSI = (½ WL + 20): Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L]
3-Volume Purge Sampling
Total Depth (TD): 3 to below MP Water Height (H):ft below MP Casing Radius (r):ft
Three Purge Volumes = 3*[Pi * r² * H * 7.48]:min/ hr H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing=0.653gal/ft, 6in casing = 1.469gal/ft

			STABI	LIZATION	READING	S			
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gat or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 fl	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/- 0.1	+ <i>J</i> 10	+/- 0.2	+/- 3%	≤ 5
1205	19.25	. 25	X	7.69	6.78	174.8	3.14	1655	Ø
1215	19.55	en danser	2.5	7.94	6.71	173.8	3.53	1673	0.1
1225	19.56e	Max.:	4.5	7.96	6.71	173.4	3,50	1678	0.4
1230	19.56	-25	5.75	7.97	6.70	173.1	3,53	1680	0.1
1235	19.65		9.7.5	7.98	الة ع	113.1	3.51	1680	0.3
1240	19,60	42000	8.0	7.99	17.0	172,8	3.51	1677	0.6
Continue stabi	lization readings	on additional pa	iges if necessa	у					

	FINAL READINGS											
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal o(L))	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)			
1240	19.60		8.0	7.99	6.71	172.8	3.51	1677	0.6			

SAMPLE ID: 16056WMW15	PLE ID: 16056WMW15A - F, U				TIME: 1240			
Final Low Flow Sampling Settings: PSI: _		_ Charge: _	. ــــــــــــــــــــــــــــــــــــ	sec Exhaust:	->	<u>sec</u>		
Note: Drawdown 1.21' ft	from	begining	Water le	wel then	Started	Low Plow.		

***	LL SAMI LING I O		Page:	of
Project No.: <u>10509188.0102</u> Client: <u>P4 Sp</u>				
Task: Groundwater Sampling Field	Crew: A Patt	Ley, L. Rodr.	iju _	
Measuring Point (MP): TO C N			\	
Sampling Method (see applicable calculations bel	ow): Low Th	Device:	Peristolt	<u>. </u>
	Low Flow Sampling			
Minimum Purge = 2* (feet * vol tubing + vol pump Tubing vol = 0.03L/ft, Bladder pump vol = 0.5L]):	_ Starting PSI = (1/2 WL -	+ 20):	
3-\	olume Purge Sampl	ing		
Total Depth (TD):ft below MP Water	· Height (H):	ft below MP Casing F	Radius (r): _	ft
Three Purge Volumes = 3*[Pi * r ² * H * 7.48]: H= TD-WL, Pi=3.1415, 1gal = 3.785L, 4in casing	=0.653gal/ft, 6in casin	gal Required F g = 1.469gal/ft	Run Time:	min/ hr

			STAB	LIZATION	READING	S		1	
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or L/min)	Cumulative Purge Vol (gal or L)	Temp (C)	pН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
Stabilization Limit	+/- 0.3 ft	Low flow ≤ 1L 3-vol = no limit	2 tube vol or 3 well vol	+/- 1C	+/~ 0.1	+/- 10	+/- 0.2	+/- 3%	≤ 5
1555	4.39								
1605	5-41	. 25 4 min	1-5-	6.79	7.42	-49./	1.43	1489	٥
1610	5.85	. 25 4 Mm	2.54	6.87	7.38	-70.7	0.60	1496	٥
1615	6.07	. 3 4m	4.04	6.19	7.36	~72.0	0.30	1552	0
1620	6.3	.34_	6.5 -	6.76	7.32	-73.9	.21	1602	O
1626	6.60	.34~	7.0L	6.81	7.33	-74.9	. 14	1614	D
1630	6.61	· 3	856	6.74	7.32	-75.0	0.07	1634	0
1635	6.70	· 3	40.0	618	7.33	755	120.0	1691	٥
1640	6.78	.3	45	6.40	7.33	-76.5	0.03	1641	٥
1645	6.82	. 3	13.0	6.80	7.33	-77.6	0	1649	0
1650	6.68.	، 3	14.5	6.13	7.33	-78.2	0	1655	ڻ ص
· · · · · · · · · · · · · · · · · · ·									
onunue stabl	nzation readings	on additional pa	ges il necessar	у					

	FINAL READINGS								
Time (24 Hr)	Water Level (ft below MP)	Purge Rate (gal or Limin)	Cumulative Purge Vol (gal or(L)	Temp (C)	рН	ORP/Eh (mv)	DO (mg/L)	Specific Conductivity (µS/cm)	Turbidity (NTU)
1650	6.88	0.3	14.5	673	7.33	-18.2	٥	1655	0

SAMPLE ID:	1605GWMAAW	16A-	UF	TIME:	1020	
_			•			
Final Low Flow	v Sampling Settinge: PSI:		Charge:	ear Evhauet	ear.	

Dountaled Transdeaux, no lock.



SURFACE WATER SAMPLE COLLECTION FORM

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling

Date 5 / 13 / 16 Arrival Time 14 50
Field Personnel
T. Osban Signatures Lell
B. Jones
SITE DESCRIPTION
Station Name West Dump Scrop Station Number MDS 025
Latitude N ° OP Fle " Longitude W ° ON Fle "
Elevation — File ft Datum NAD 27 Photo Number
Site & Stream Description Geep coming out of multiple
Site & Stream Description Geep coming out of multiple
Surface Water Characteristics (color, odor, appearance):
organic alor
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(Y. Up-stream DAcross-stream
Sample ID: 1605 SW MD So 25 - U, F Sample Time: 1455
•
Field Measurements

Field Measurements						
Parameter	Sample 1	Sample 2	Sample 3			
Time	1455					
Water Temperature (°C)	1455					
Specific Conductivity (µS/cm) @ 25° C	1333					
Conductivity (µS/cm)	977					
TDS (g/L)	0					
Dissolved Oxygen (% sat.)	53.3					
Dissolved Oxygen (mg/L)	5.74					
рН	7.06					
ORP (mV)	28.2					
Turbidity (FFU) WTV	12,4 NTU		10			
Air Temperature	50°F					

> /13	116		Time	1500	<u> </u>	Stat	on Number	MDS	
ed by: _	TD. I	35		,	Checke	d by:			
			Flo	w by Cap	ture Meth	<u>od</u>			
Measuren	nent Number			Time	(sec)		Volume	± (L)	
						,			
				Flow by	y Meter				
R.E.W		<u>ft</u>		N				ft	
		Nun	nber of		Based on St	ream Width			
Total	Width (ft)	$\overline{}$			Subsections - 10		Subsection 0.2 -		
	<2 2 - 4				- 10 - 12		0.3 -		
	4 - 10				- 15		0.4 - 0.7		
1	0 - 20		15 - 20 20 - 25				0.7 - 1.0 1.0 - 2.0		
·:	>20	5	- ()/-		ement (Ft. Be	lour Surface			
Total De		ft : 0.6	TD (sta	ndard setting	g rod); >2.0ft	t : 0.2TD = (1	DX2) and 0.8TD		
Distance from		<u>0.6</u> <u>(</u>	<u>).8</u> (ci	rcle)	from		Depth of Velocity Measurement 0.2 0.6 0.8 (circle) (bsection Subsection Velocity		
Reference	Subsection No.	Subse Depti		Velocity (30 sec)	(or N/A)	Subsectio No. (or N/A		(30 sec)	
	2								
	3								
	4								
	5				-				
	6 7	<u> </u>							
	8							73	
	9							1	
	10 ና								
	11							. 1	
	11 12								

No Flow Seeps coming out of Multipul places on hill side

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling

		سه ۱ هـ ۱	
Date <u>5 / (3 /</u>	16 Arrival Time	15.50	
Field Personnel		and the same of th	
T. Osbo	Sig	inatures Con C	Mr
B. Jowes			
SITE DESCRIPTION	NC		
Station Name	bouth Dump	Sep	Station Number <u>MD-62</u>
Latitude N	· ON · Ale "	Longitude W	· ex · file."
	he_ft Datum N		
Site & Stream Des	scription See S	Pairtichten is	v multiple spot
ALLBSS	Lill side ~3	o' wide tal	I gray + willowe
Surface Water Ch	aracteristics (color, ode	or, appearance):	Clear odurtass
SAMPLE COLLE	CTION		
Collection Method	: 1L bottle, Horizontal-bott	e Swing-sampler, Other	(). Up-stream \Across-stre
	The state of the s		Sample Time: \5.55
· · · · · · · · · · · · · · · · · · ·	Eiol	d Measurements	
	LIE	u Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	(5:55		
Water Temperature	9.9°C ·		
Specific Conductivity (µS/cm) @ 25° C	1869		
Conductivity (µS/cm)	(33)		
TDS (g/L)		>	
Dissolved Oxygen (% sat.)	48.(
Dissolved Oxygen (mg/L)	530		
рН	7.01		
ORP (mV)	56.2		172
Turbidity			

Air Temperature

115	116		Time	ecific Se Pro	b	S	statio	n Number		
ted by: _	BJ	I	0	***	Checked	d by:				
		′	Flo	w by Cap	ture Meth	<u>od</u>				
Measurem	ent Number			Time	(sec)			Volume	(L)	
$\overline{}$										
		1		Flow by	/ Meter	**********				
R.E.W		ft	L.E.	W		al Wid	dth		ft	
				f Subsections		ream V	/idth			
Total	Width (ft)				Subsections			Subsection		
	<2 2 - 4				· 10 - 12		0.2 - 0.3 0.3 - 0.4			
	2 - 4 1 - 10	$\overline{}$	10 - 12 12 - 15				0.4 - 0.7			
1	0 - 20 >20		15 - 20 20 - 25					0.7 - 1.0 -		
Total De Distance	Depth of	Oft : 0.6	n of Velocity Measurement (Ft. Below S iTD (standard setting rod); >2.0ft : 0.2' ty Measurement Distance 0.8 (circle from				TD = (TDX2) and 0.8TD = (TD/2) Depth of Velocity Measurement 0.2 0.6 0.8 (circle)			
from Reference	Subsection No.			Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)		Subsection Depth (ft)	Velocity (30 sec)	
	1									
	3									
	4									
	5		·· ·							
	6		<u>.</u>							
	7						<u> </u>			
	8						+			
	9 10									
	11									
	12									
	13									
	14			1		1		1	N	

seces coming out of multiple places (on hillside ~ 30' wide. Unable to get flow

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling

P	roject P4 Production	1 SE Idano Mine-opeoine e		
ם	ate <u>5/10/</u>	(6_ Arrival Time_	9:30am	
F	ield Personnel		L' C	The state of the s
	T. Osbern	B, Jones Sig	natures _ Ca Jan	
_	G. Year	15	natures <u>Li Ih</u>	
SIT	E DESCRIPTIC	ON		
	Station Name	1+ #2 Upper	Dump Seep Sta	tion Number MOSO30
	Station Name			F. 6. "
. 1	_atitude <u>N</u>	· ON The	Longitude <u>W</u> °	00
	F) or Deturn Mi	AD 27 Photo Numb	er 🥱
(Site & Stream Des	<u> ج کی ک</u>	min at of	hill side beneth
-	1,64	,	or annoarance): 6/8	ar ascates
	Surface Water Cha	aracteristics (color, od	or, appearance).	at Section
SA	MPLE COLLE	CTION		
	Callection Method	1. 11. bottle. Horizontal-bott	tle, Swing-sampler, Other(). Up-stream / Across-stream
	Collection method	_		Sample Time: 9:40 as =
	Sample ID: 160	55WMDS030-1,Q=	F,U	_Sample Time: <u>9:40 ax</u> _
:			ld Measurements	
	- Devemotor	Sample 1	Sample 2	Sample 3
	Parameter			

	Field Measurements									
Parameter	Sample 1	Sample 2	Sample 3							
Time	0930	0940								
Water Temperature (°C)	8.1"0	8.3°C								
Specific Conductivity (µS/cm) @ 25° C	944	434								
Conductivity (μS/cm)	640	637								
TDS (g/L)	770	emanage TE								
Dissolved Oxygen (% sat.)	64.5%	54.5								
Dissolved Oxygen (mg/L)	7.31	6.28								
рН	7.47	7.14								
ORP (mV)	12.6	97.4								
Turbidity (FTU)	35°F	0.27								
Air Temperature	35°F	35°F								

5/10	116	Time <u>9:49</u>	aga	Statio	n Number ₋	MOS		
eted by: _	35.EY	(< >	Checked	d by:				
		Flow-by Cap						
Measuren	nent Number	Time	(sec)		Volume	(L)		
medodienen (tambo)		3.23		i.	25			
2		3.80		ĺ.	4			
3		3,81		4	4			
		Flow b	y Meter		-			
R.E.W	. <u>ft</u>	L.E.W	<u>ft</u> Tot	al Width		ft		
		mber of Subsection		ream Width				
Total	Width (ft)		Subsections		Subsection			
	<2 2 - 4		- 10) - 12		0.2 - 0 0.3 - 0			
	4- 10	12	! - 15		0.4 - 0.7			
1	0 - 20 >20		5 - 20) - 25		0.7 - 1.0 1.0 - 2.0			
Distance from	<u>0.2</u> <u>0.6</u>	ty Measurement 0.8 (circle)	Distance from Reference		Depth of Velocity Measurement 0.2 0.6 0.8 (circle) Subsection Subsection Velocity			
Reference		ection Velocity th (ft) (30 sec)	(or N/A)	No. (or N/A)		(30 sec)		
	1	***************************************						
	2							
	3							
	4							
-	5							
	6			1				
				-				
	7							
	7 8							
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	7 8 9							
	7 8 9 10							
	7 8 9 10 11							
	7 8 9 10 11 12 13							
	7 8 9 10 11							

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling

100	Field Measurements									
Parameter	Sample 1	Sample 2	Sample 3							
Time	1300		•							
Water Temperature (°C)	17,5°C.									
Specific Conductivity (µS/cm) @ 25° C	1040									
Conductivity (µS/cm)	891									
TDS (g/L)										
Dissolved Oxygen (% sat.)	36.7									
Dissolved Oxygen (mg/L)	3.46									
pН	7.54									
ORP (mV)	23.0									
Turbidity (FTU)	0.55									
Air Temperature	23.0 0.55 53°F		To							

Pro	ject <u>P4 Produ</u>	ction SE Ida	<u>ho Mir</u>	ie-Sp	ecific Se Pr	ogram – Sr	oring 2016 S	SW Sampling	a	۵
Dat	e <u>5 / 12</u>	-116			13:03			n Number	MDS	034
Coi	mpleted by:	Ton	B7			Checke	d by:			
				Flo	w by Cap	ture Meth	<u>od</u>			
f	Measure	ment Number			Time	(sec)		Volume	(L) .	
	ì			1	3,8			0.7	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
				į	6,3			0.7		
		3		Ì	4.5			0.65	11040	- #
					Flow by	y Meter				
,	R.E.V	V	ft	L.E.	w	<u>ft</u> Tot	al Width		ft	
9			Nun	nber o	f Subsections	Based on St	ream Width			
	Tota	l Width (ft)				Subsections		Subsection		_
	$\overline{}$	<2 2 - 4				- 10 - 12		0.2 - 0		-
		4-10			. 12	- 15		0.4 - 0		
		10 - 20 >20				- 20 - 25		0.7 - 1 1.0 - 2		_}
		>20	Donth	of Vol	ocity Measure		low Surface)			
	Total D	epth (TD): <2.						X2) and 0.8TD	= (TD/2)	
	Total				urement	Distance		Velocity Meas		
	Distance	<u>0.2</u>	8.6). <u>8</u> (c	ircle)	from		<u>0.2 0.6 0</u>	<u>.8</u> (circle)	
	from Reference	Subsection No.	Subse Depti		Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)		Velocity (30 sec)	. Auros
		1								
		2		4						
		3								
		4								
		5								
		6						·		
		7								
		8								
		9								
		10								
		11								
		12								
		13						1		
		14	1			N. Control of the Con			7	1

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling

ı	Date <u>5/10 / (6</u> Arrival Time <u>15 ', (0</u>
	Field Personnel
-	TO BJ EY Signatures Is Show
-	
SIT	E DESCRIPTION
;	Station Name Holmoren Spring Station Number MSGOY
	Station Name Holmgren Spring Station Number MSGOY Latitude N ° ON 'File " Longitude W ° ON File "
ļ	Elevation عم كناحي ft Datum <u>NAD 27</u> Photo Number
	Site & Stream Description Marshy spring with lets of Fillow
	trees and bebris
	Surface Water Characteristics (color, odor, appearance): Brown that, clear,
SA	MPLE COLLECTION
	Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other () Up-stream Across-stream
	Sample ID: 1605 SWMSGOOY - U.F. Sample Time: 15,15
	Field Measurements
ł	

	Fie	ld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	15:15		
Water Temperature (°C)	8. 8 C		
Specific Conductivity (µS/cm) @ 25° C	648.6		
Conductivity (μS/cm)	447.3		
TDS (g/L)	TU		
Dissolved Oxygen (% sat.)	105.5		
Dissolved Oxygen (mg/L)	11,92		
рН	8.12		
ORP (mV)	17.6		
Turbidity (FTU)	3,42		
Air Temperature	35° F		TD

ted by: <u>①</u>	O EY	(BT		Checke	d by:				
	· / .	'	ow by Cap						
Measuran	nent Number		Time	(sec)		,,,,	Volume	e (L)	
· · · · · · · · · · · ·						***			
	10	F	low		1 1 1 1 1 1	***********	The same of the sa		
•								570	
			Flow b	y Meter					
R.E.W	•	<u>ft</u> L.E	.w	<u>ft</u> Tot	al Wid	dth		ft	
		Number o	of Subsections	Based on St	ream V	Vidth		_	
Total	Width (ft) <2			Subsections - 10			Subsection 0.2 -		
	2 - 4		10	- 12			0.3 -	0.4	
	1 - 10 0 - 20		15	- 15 - 20			0.7 -	1.0	
	>20	D = 1415 = 63/=	20 locity Measur	- 25	lavr Sur	rfaco)	1.0 -	2.0	
Total De	pth (TD): <2.0		andard setting				X2) and 0.8TE) = (TD/2)	
Distance		Velocity Mea 0.6 0.8 (c	Measurement Distance			Depth of Velocity Measurement 0.2 0.6 0.8 (circle)			
from Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)		ection or N/A)		Velocity (30 sec)	
	1								
	2	· .		:					
	3		1000			110-1-11			
	4								
	5			Andrew Control					
	6			No.					
	7								
	8				1				
	9					1			
	10					* N. C. S.	2.		
	11				ļ .		1		
	12								
	13	:					,,,,,		
	14								·
			1				I	I \	1

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling

Date 5 / 10 / 16 Arrival Time 15.40
Field Personnel
To , BJ , EY Signatures _ ()
SITE DESCRIPTION
Station Name Cattle Spring Station Number M5G 005
Latitude N ° A The Congitude W ° AN FERE
Elevation w Fite ft Datum NAD 27 Photo Number 9
Site & Stream Description water coming and of piped spring
into calf trough
Surface Water Characteristics (color, odor, appearance):
SAMPLE COLLECTION
Collection Method: 1L bottle Horizontal-bottle, Swing-sampler, Other (Up-stream Across-stream
Sample ID: 1605 SWMS 4005 - U, F + MS/MCD Sample Time: 15:45

	Fie	ld Measurements	. 3
Parameter	Sample 1	Sample 2	Sample 3
Time	15:45	15,50	15:55
Water Temperature (°C)	7.1	7.1	7,0
Specific Conductivity (µS/cm) @ 25° C	675.5	673.3	671.6
Conductivity (µS/cm)	444.5	442.2	441.1
TDS (g/L)			70
Dissolved Oxygen (% sat.)	72,0	66.0	62.5
Dissolved Oxygen (mg/L)	8.45	7.37	7.51
pН	7.45	7.86	7.79
ORP (mV)	18.6	19.8	20.9
Turbidity (FTU)	0.19	0.20	0.16
Air Temperature (°C)	35 F	35° F	35 F

Projec	ct P4 Produc	tion SE Ida	ho Mine-S	pecific Se P	rogram – Sr	oring 2016 S	SW Samplin	g
Date _	5/10	1 110	_ Tim	e <u>15</u>	45	Statio	n Number	m56
Comp	leted by: 1	D BU			Checke	d by:		
		•		ow by Cap	ture Meth	<u>od</u>		
	Measuren	nent Number		Time	(sec)		Volume	(L)
				J,c	IW		3.5	
	0	2			75 <u> </u>		<u> </u>	
		<u> </u>		3	40 <u> </u>		4.0)
				Flow b	y Meter			/
	R.E.W	1		.w		al Width		ft _0/
			Number	of Subsection		ream Width		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Total	Width (ft)			Subsections - 10		Subsection 0.2 -	
-		2 - 4		10	- 12		0.3 -	Ó.4
		4 - 10			: - 15 5 - 20		0.4/- 9.7 -	
<u> </u>	1	0 - 20 >20) - 25		/1.0 -	
	Total De		Depth of Volential Depth of Vole		g rod); >2.0ft Distance from	: 0.2TD = (TD	X2yand 0.8TD Velocity Meas 0.2 0.6 0	urement
	from Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)		Velocity (30 sec)
		1						
		2						
		3				/		
		4			/	1		
		5						
		6						
·		7						
		8			/			
		9						
		10						
		11		1 /				
		12		1/				
		13		/		The state of the s		
		14		1				
	 	15	 					

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling

Σ	Date <u>5 / 1) / 16 Arrival Time / 0:20</u>
F	Field Personnel
2	To, BJ Signatures Control Signatures
SIT	E DESCRIPTION .
;	Station Name Southeast Spring Station Number MSG006
l	Latitude N ° Longitude W ° L
	Elevation of file the Datum NAD 27 Photo Number 1
;	Site & Stream Description Seep coming out of sike of hill below food pleat to willows . Con path withing across
	below pad pext to willows. Con path cutting across.
	Surface Water Characteristics (color, odor, appearance):
SA	MPLE COLLECTION
	Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other (Up-stream) Across-stream
	Sample ID: 1605 6W MSG 006 - U, F Sample Time: 10:25
	Field Measurements

	Fie	ld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	10:25		
Water Temperature (°C)	77°C		
Specific Conductivity (µS/cm) @ 25° C	1708		
Conductivity (µS/cm)	1125		
TDS (g/L)	70		
Dissolved Oxygen (% sat.)	65,9		
Dissolved Oxygen (mg/L)	7,91		
рН	7.50		
ORP (mV)	12.8		
Turbidity (FFせ) いてひ	090 NTU		70
Air Temperature	43' P		

pject P4 Production SE Idaho M	Time 100.2	ogram – Sp て	Station Number_ <i>MSG00</i> 6
le <u>> / / / / </u>	Time Or C	- Marie - Mari	Otation Number 4 P 0
mpleted by: <u>TO BT</u>	and the second s	Checked	l by:
	Flow by Capt	ture Meth	<u>od</u>
Measurement Number	Time ((sec)	Volume (L)
			And the second s
R.E.Wft	Flow by		al Widthft
		<u>ft</u> Tot	
	L.E.W umber of Subsections	<u>ft</u> Tot	
N	L.E.W umber of Subsections Number of 8	ft Tot Based on Str Subsections	Subsection Width (ft) 0.2 - 0.3
Total Width (ft) <2 2-4	L.E.Wumber of Subsections Number of 8	ft Total Based on Str Subsections 10 -12	Subsection Width (ft) 0.2 - 0.3 0.3 - 0.4
Total Width (ft) <2 2 - 4 4 - 10	L.E.Wumber of Subsections Number of S 8 - 10 12	ft Total Based on Str Subsections 10 -12 -15	Subsection Width (ft) 0.2 - 0.3 0.3 - 0.4 0.4 - 0.7
Total Width (ft) <2 2 - 4 4 - 10 10 - 20	L.E.Wumber of Subsections Number of S 8 - 10 12 15	ft Total Based on Str Subsections -10 -12 -15 -20	Peam Width Subsection Width (ft) 0.2 - 0.3 0.3 - 0.4 0.4 - 0.7 0.7 - 1.0
Total Width (ft) <2 2 - 4 4 - 10 10 - 20 >20	L.E.W	ft Tot. Based on Str Subsections -10 -12 -15 -20 -25	Peam Width Subsection Width (ft) 0.2 - 0.3 0.3 - 0.4 0.4 - 0.7 0.7 - 1.0 1.0 - 2.0
N Total Width (ft) <2 2 - 4 4 - 10 10 - 20 >20 Dep	L.E.Wumber of Subsections Number of 8 10 12 15 20 th of Velocity Measure	ft Total Based on Str Subsections -10 -12 -15 -20 -25 ement (Ft. Bel	Peam Width Subsection Width (ft) 0.2 - 0.3 0.3 - 0.4 0.4 - 0.7 0.7 - 1.0 1.0 - 2.0

Distance	Depth of <u>0.2</u>	Velocity Meas 0.6 0.8 (c	surement irole)	Distance from	Depth of Velocity Measurement 0.2 0.6 0.8 (circle)				
from Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)		
	1								
	2								
	3			\					
	4						-		
	5								
	6					,			
	7								
	8				\				
	9								
	10								
	11								
	12								
	13								
	. 14						>		
	15								

No Flow, seep out of hill stille ~30' wide with No reasonable flow

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling

Date 5 / 11 / 18 Arrival Time 10:00
Field Personnel
TO B5 Signatures 6 Dh
SITE DESCRIPTION
Station Name South of South east Spring Station Number MSG007 Latitude N ° ou File " Longitude W ° ou File "
Latitude N ° ov 'File " Longitude W ° ov 'File "
Elevation of File Datum NAD 27 Photo Number
Site & Stream Description spring comy out of the base of
hill side ~ 30' wide No sage brush on sproky
Surface Water Characteristics (color, odor, appearance): <u>Brown</u> color modeste
eganic olar
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(). Up-stream / Across-stream
Sample ID: 16055WMS6007-U, FSample Time: 10:05

	Field	Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	10:05		
Water Temperature (°C)	6.3°C		
Specific Conductivity (µS/cm) @ 25° C	634.3		
Conductivity (µS/cm)	408.2		
TDS (g/L)	The production of the last to		
Dissolved Oxygen (% sat.)	27.8		
Dissolved Oxygen (mg/L)	3.4		
pH	8.00		
ORP (mV)	5.6		
Turbidity (FTU)	0.70		16
Air Temperature (°C)	43' F		

Project	P4 Produc	ction SE Ida	ho Mine- Tiı	Specific Se P	rogram – Si	oring 201 Sta	16 SW Samplir ation Numbe	ng r_ <i>MSG</i>	007
Compl	eted by: _	Tb,	137		Checke	d by: _			
,			<u>F</u>	low by Car	ture Meth	<u>od</u>			
	Measuren	nent Number		Time	(sec)		Volume	e (L)	
	$\overline{}$								
	$\overline{}$			Flow b	y Motor	**************************************			
	5		<i>54</i> 1	-	y Meter			ft	
	R.E.W	<u>· </u>		r of Subsections			Դ	!\	
	Total	Width (ft)	Numbe		Subsections	Team Wid	Subsection	Width (ft)	
		<2		8	- 10		0.2 -	0.3	
		2 - 4 4 - 10			- 12 - 15		0.3 - 0.4 -		
		0 - 20		15	- 20		0.7 -	1.0	
		>20			- 25		1.0 -	2.0	
	Total De	pth (TD): <2.0	٠,	Velocity Measur (standard settin			ce) (TDX2) and 0.8TD	o = (TD/2)	
	Distance		Velocity M 0.6 0.8	easurement (circle)	Distance from	Dept	h of Velocity Mea 0.2 0.6	surement 0.8 (circle)	
	from Reference	Subsection No.	Subsection Depth (ft	31 -	Reference (or N/A)	Subsect No. (or N		Velocity (30 sec)	
		1	***						
		2							
		3							
		4							
		5							
		6							
		7							
		9							
		10							
		11					1		
		12					10		
		13							
		14							

No Flow, Spring is seeply out of hillside approx 20 wide through tall tosonocks of gress "humanity"

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling

Date <u>5 / 9 /</u>	16 Arrival Time	15:05		
Field Personnel				
T. OSB-PAV	B. Joves Si	gnatures La O		· · · · · · · · · · · · · · · · · · ·
E Yenger	<u> </u>			
SITE DESCRIPTI				-
			tation Number MST	
			· on ·file	<u>''</u>
		IAD 27 Photo Num		
Site & Stream Des	scription \sim 30 Ft	- wide stren	m topp. Ng .	NE
water flow	my through ger	asses + Schr	m topp. Wg w.	
Surface Water Ch	aracteristics (color, od	or, appearance): <u> </u>	ouly high r	W
SAMPLE COLLE)	ive panacy		
		u dulin commission (M.)		
			Up-stream Ac ros	
	711) - 1 . 11 / 11 / 1 / 1 / 1 / 1	3191 11 - 1	Sample Time:	
Sample ID:[<u> </u>			10
Sample ID:		ld Measurements)6
Parameter			Sample 3	
	Fiel	ld Measurements		
Parameter	Fiel	ld Measurements		
Parameter Time Water Temperature	Fiel Sample 1 (5', 05	ld Measurements		
Parameter Time Water Temperature (°C) Specific Conductivity	Fiel Sample 1 (5'. 05	ld Measurements		
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity	Field Sample 1 15'. 05 12.5°C 32.9.7	ld Measurements		
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS	Field Sample 1 15'. 05 12.5 °C 32.9.7 251.3	ld Measurements		
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen	Sample 1 15'. 05 12.5°C 32.9.7 25.1.3 94% 8.0	ld Measurements		
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen	Sample 1 15'. 05 12.5°C 32.9.7 251.3 94'/6	ld Measurements		
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L)	Sample 1 15'. 05 12.5°C 32.9.7 25.1.3 94% 8.0	ld Measurements		
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L) pH ORP	Field Sample 1 15'. 05 12.5°C 32.9.7 251.3 94% 9.0 7.48	ld Measurements		

<u>)5 / 09</u>	12016		Time	e <u>\S:05</u>		;	Static	n Number	r MST
eted by: ថ្មី	5. Jones/T.	osb.	ruli	E. Yeager	Checke	d by:			
	,			_	ture Meth				· · · · · · · · · · · · · · · · · · ·
Measuren	nent Number			Time	(sec)			Volume	(L)
				Flow b	y Meter		/		
R.E.W	I	ft	L.E.	w	<u>ft</u> Tot	al Wi	dth_		ft
-		Nun	iber o		s Based on St	ream V	Vidth		
Total	Width (ft)				Subsections - 10			Subsection 0.2 -	
	2 - 4				- 12			0.3 -	
	4 - 10 0 - 20			15	- 15 - 20			0.4 - 0.7 -	
	>20				- 315		*****	1.0 -	2.0
Total Da	unth (TD): <2 (,	ement (Ft. Bel			X2) and 0.8TD) = (TD/2)
Distance	Depth of		/ Mea	standard setting rod); >2.0ft : 0 easurement Distance (circle)			Depth of Velocity Measurement 0.2 0.6 0.8 (circle)		
from Reference	Subsection No.	Subse Depth		Velocity (30 sec)	Reference (or N/A)		ection or N/A)		Velocity (30 sec)
	1		$\overline{}$						
	2		/						
	3								
	4								
	5 /								
	6								
	1								-
	8								
	9								
	10								
	11								
/ .	12								
/	13								
<u></u>	14							-	
	15								
-	I	l			GS stal				<u> </u>

Project P4 Production SE Idaho Mine-Specific Se Program – Spring 2016 SW Sampling

I	Date <u>5 / U / 16</u> Arrival Time <u>13,30</u>
1	Field Personnel
	To BJ Signatures
	E DESCRIPTION
	Station Name Blackfort River below State foul Grank Station Number MSTO20
	Latitude N ° 🔊 🛱 _ " Longitude W ° 🔊 - fite "
	Elevation or file the Datum NAD 27 Photo Number
	Site & Stream Description water vary high almost topping over The
	banks of the stream
	Surface Water Characteristics (color, odor, appearance):
	MPLE COLLECTION
	Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(Up-stream / Across-stream
	Sample ID: 1605 SWMST020-UF Sample Time: 13:35
	Field Mesourements
	Field Measurements

	Fie	ld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	13135		·
Water Temperature (°C)	8.4°C		
Specific Conductivity (µS/cm) @ 25° C	454.7		
Conductivity (µS/cm)	310.2		
TDS (g/L)	To		
Dissolved Oxygen (% sat.)	82.2%		
Dissolved Oxygen (mg/L)	82.27. 9.66		
pH-	8.27		
ORP (mV)	22.3		
Turbidity (ETU) いてひ	19.6 NTU		175
Air Temperature	43°F		, , ,

Project	<u>P4 Produc</u>	tion SE Ida	ho Mine-S	pecific Se Pr	ogram – Sr	oring 2016 S	W Samplin	g	
Date _	5/11	1 16	_ Tim	e 13:40		Statio	n Number	MST	020
Compl	eted by:	10, B	\		Checke	d by:			
(•		ow by Cap	<u>ture Meth</u>	<u>od</u>			
	Measuren	nent Number		Time	(sec)		Volume	(L)	
	\								
				Flow by	y Meter				
 	R.E.W			.W				ft	7
<u> </u>		$\overline{}$	Number	of Subsections		ream Width	Cba-Man	Mille (#)	_
	Total	Width (ft)			Subsections - 10		Subsection 0.2 -		-
		2 - 4			- 12		0.3 -	0.4	1
		4 - 10	$\overline{}$	12 - 15 15 - 20 20 - 25			0.4 - 0.7 -		-
<u> </u>	1	>20	$\overline{}$				1.0 - 2.0		
	Total De	Depth of	Depth of V oft: 0.6TD (s Velocity Me 0.6 0.8 (elocity Measur tandard setting asurement (circle)	p rod); >2.0ft Distance from	: 0.2TD = (TD	X2) and 0.8TD Velocity Meas 0.2 0.6 (surement	
	from Reference	Subsection No.		1 Velocity	Reference (or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)	
		1							
		2							
		3							
		4							
		5				<u> </u>			
		6							
		7							
		8							
		9							
		10							
		12			-		 \		
		13					\vdash	1	
		13							

Stream flow to High to Satisfy outer. W:11 use USGS Stream graye that is stational down's stream

SAMPLE COLLECTION

	•
) Up-stream Across-stream
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(Op-stream/ Across-stream
	Sample Time: 12:05
Sample ID: 16055WMST044-U, F	Sample Time.

Short Basalt cliff bank (~2-10' tall) Eweaphy / meanly banks in

Surface Water Characteristics (color, odor, appearance): Ulear, odorless

some small bubbles (white) or surface

	Fie	ld Measurements	
Parameter	Sample 1	Sample 2	· Sample 3
Time	12;05		
Water Temperature (°C)	12:05 13.5°C		
Specific Conductivity (μS/cm) @ 25° C	699		
Conductivity (µS/cm)	545		
TDS (g/L)			
Dissolved Oxygen (% sat.)	95.7		
Dissolved Oxygen (mg/L)	9.98		
рН .	8.17		
ORP (mV)	38.6		
Turbidity (FTU)	1.33		
Air Temperature	53°F		87/

Proje	ct P4 Produc	tion SE Idal	ho Mine-Sr	oecific Se Pr	ogram – Sp	oring 2016 S	SW Samplin	g		
Date <u>5 / 12 / 16</u> Time <u>1220</u>						Statio	n Number	MST	<u> </u>	<u>/</u>
Comp	oleted by: _	TO B	<u> </u>		Checked	d by:				
				ow by Cap	ture Meth	<u>od</u>			·	12
	Measurem	ent Number		Time	(sec)		Volume	(L)		
				· · · · · · · · · · · · · · · · · · ·						
				Flow by	/ Meter					
	R.E.W	10.0	<u>ft</u> L.E	.w. <u>(,0</u>	<u>ft</u> Tot	al Width	21.8	ft		
			Number	of Subsections		ream Width				
-	Total	Width (ft)			Subsections · 10		Subsection 0.2 -			
		2 - 4		10	- 12		0.3 - 0.4 -			
		1 - 10 0 - 20			- 15 - 20		0.7 -	1.0		
		>20			- 25		1.0 -	2.0		
	Total De	oth (TD): <2.0		elocity Measure tandard setting			X2) and 0.8TD) = (TD/2)		
			Velocity Mea	surement	Distance		Velocity Meas	surement-		
	Distance from	0.2	0.6 0.8 (,	from Reference	Subsection	0.2 0.6 Subsection	Velocity		
	Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	(or N/A)	No. (or N/A)		(30 sec)		
	1.0	1	0.3	-0.11	8.5	16	0.7	0.21		
	1.5	2	1.1	0.78	9.0	17	0.3	0.15		
	2.0	3	1.1	2.77	9.5	18	0.2	OIZ		
	2.5	4	1.2	3.54	10.0	19	NA	NA -	→ \\	Flow
	3.0	5	1.3	1.82						
	3.5	6	1.2	0.17						
	4.0	7	1.3	2.3						
	4.5	8	1.1	2.61				T		
	5.0	9	0.9	2.73						
	5.5	- 10	0.9	1.98						
	6.0	11	0.9	1.91					1	
	6.5	12	0.9	1.33						
	7.0	13	0.8	0.90					-	
	7.5	14	0.8	0.66					-	
	8.0	15	0.8	0.38						

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling Date 5/12 / 16 Arrival Time 10. 35 Field Personnel Signatures __ SITE DESCRIPTION LIH'M Black fort Rimor above Station Name Henry Creek Station Number MSTOUS · ou 'file" LongitudeW · ou 'le " Elevation and File ft Datum NAD 27 Photo Number _____ Site & Stream Description 10 ft with Stream w/ 30 ft. with overbank in 100 ft. wide ravine; flat grant stream bottom Surface Water Characteristics (color, odor, appearance): Ckar; No odo-; Same organic matter on steam SAMPLE COLLECTION Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(). Up-stream Across-stream Sample ID: 16055wmsTo45-U,F+ Doptete Sample Time: 1100

Field Measurements										
Parameter	Sample 1	Sample 2	Sample 3							
Time	1100	1105								
Water Temperature (°C)	11.6	11.6								
Specific Conductivity (µS/cm) @ 25° C	693	693								
Conductivity (µS/cm)	515	516								
TDS (g/L) .	70									
Dissolved Oxygen (% sat.)	81.0	89.1								
Dissolved Oxygen (mg/L)	9,62	9.68								
рН	8.02	8.02								
ORP (mV)	38.7	38.2								
Turbidity (FTU)	1.08	1.40								
Air Temperature	53°F	53°F								

Proj	ect	P4 Produc	tion SE Idal	no Mine-Si	oecific Se Pr	ogram – Sp	oring 2016 S	W Samplin	g	「カルド
Date	<u> </u>	5 / 12	12016	_ Tim	e <u> : 5</u>		Statio	n Number	· /w 2	1045
Con	nple	eted by: _	B. Jour	> T. E	sborn	Checked	d by:			
				FI	ow by Cap	ture Meth	<u>od</u>			•
	*	Measurem	ent Number		Time	(sec)		Volume (L)		
			·							
		20								
L	157.2				Flow by	y Meter				
		R.E.W	21.45	<u>ft</u> L.E	.w. <u>31.0</u>	<u>ft</u> Tot	al Width	36.2	ft	
				Number	of Subsections	• ,	ream Width			
<u> </u>		Total	Width (ft)			Subsections - 10		Subsection 0.2 -		
ŀ			<2 2 - 4			- 12		0.3 -	0.4	
ŀ			1 - 10			- 15 - 20	·	0.4 - 0.7 -		
			0 - 20 >20			- 25		1.0 -		
Ĺ				Depth of V	elocity Measure	ement (Ft. Be	low Surface) ₇	D/2 (ou state) TOX2 ((ou stat)
		Total De	pth (TD): <2.0	oft : 0.6TD (s	tandard setting	g rod); >2.0ft				ก
		Distance			0.8 (circle) from			Depth of Velocity Measurement 0.2 0.6 0.8 (circle)		
		from Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)	
		21.5	1	1.15	0.60	29.0	16	1.0	0.26	24 min
		22.0	2	1.20	0.83	29.5	17_	0.9	0.14	
		22.5	3	1.20	1.05	30.0	18	0.9	0.88	-
		23.0	4	1.20	0.95	30.5	। १	0.9	0, 18	- N. Ela.
		23.5	5	1.25	1.24	31.0	20	NA	NA -	> N. Flow
		24.0	6	1.30						
		24.5	7	1.30	1.26					
		25.0	8 9	1.30						
		25.5	10	1.35						
		26.0	11	1.3	1.31					
		26.5	12	1.3	1.31					
		27.0	13	1.2	1.25					
		27.5	14	1.2	0.8					
		28.0	15	1.1	1.00					
		28.5		1.1	0.69				<u> </u>	

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling Date <u>5 1 9 1 16</u> Arrival Time <u>17.41</u> Field Personnel T. Ocher B. Jores Signatures Li Dh SITE DESCRIPTION Station Name Long Valley Creek below Balled Move Station Number MSTOSO

Latitude N ON Rie " Longitude W ON File " Elevation of Datum NAD 27 Photo Number 2 Site & Stream Description Stream Flow North of catchment pond Surface Water Characteristics (color, odor, appearance): Yellowish green, ederless SAMPLE COLLECTION Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(). Up-stream / Across-stream Sample ID: 1605 SW MST 050 - U, F Sample Time:_____ **Field Measurements** Sample 3 Sample 2 Sample 1 Parameter 17:50 Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C 233.0 %

Conductivity (µS/cm) TDS (g/L)

(% sat.)

(mg/L)

pН

ORP (mV) Turbidity

(FTU)

Dissolved Oxygen

Dissolved Oxygen

Air Temperature

103.2 %

7.99

131.9 ml

3,02 NTU

49° F

8.10 3/2

ojec	t P4 Produ	ction SE Ida	aho Mine-S	<u>pecific Se P</u>	<u>rogram – S</u>	pring 2016 :	SW Samplin	<u>g</u>	
ite _	5 110	166	Tim	e 08:40)	Statio	on Number	MSTO	
mpl	leted by: _	BI	10,6	<u> Y</u>	Checke	ed by:			
			,	ow by Car					
part I	Measurement Number			Time	(sec)		Volume	(L)	
	-			1.49	,	4	7.25		
		<u></u>		155	•		9.5		
		25		1.49			7.75		
[<u> </u>	Flow b	y <u>Meter</u>				
	R.E.W	1		.w				ft	
	i de la companya de l		Number	of Subsection	s Based on S	tream Width			
	Total	Width (ft)			Subsections - 10		Subsection		
_		<2 2 - 4			- 10) - 12		0.2 - 0.3 0.3 - 0.4 0.4 - 0.7 0.7 - 1.0 1.0 - 2.0		
		4,-10			2 - 15				
<u> </u>	1	10 - 20 >20 \			5 - 20 9 - 25				
	Distance from Reference	0.2 Subsection	0.6 0.8 (c) Subsection	ity Measurement D.8 (circle) Rection Velocity		Subsection	Subsection	Velocity	
		No.	Depth (ft)	(30 sec)	(or N/A)	No. (or N/A)	Depth (ft)	(30 sec)	
		2		N. T.					
		3		N. A.			.i		
		4		N. A.					
		5			S. A.				
		6							
		7							
		8			``	<u> </u>			
		9		-					
		10			: 	1		· · · · · ·	
		11				1	Carried Control		
	-	12 13					'		
	II	14		1					

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling Date 5/12/16 Arrival Time 1355 Field Personnel T. Osber J __ Signatures _ SITE DESCRIPTION Fork Long Valley creek B-c low Henry Mine Station Number MSTO 51 Station Name Longitude W Latitude N Datum NAD 27 Photo Number _____ Elevation Owl Site & Stream Description _ Surface Water Characteristics (color, odor, appearance): ___ SAMPLE COLLECTION Collection Method: 1L bottle, Herizontal-bottle, Swing-sampler, Other((. Up-stream / Across-stream Sample ID: 1605 SWMST05 1 -Sample Time:___ **Field Measurements** Sample 3 Sample 2 Sample 1 Parameter Time Water Temperature **Specific Conductivity** (µS/cm) @ 25° C Conductivity (µ\$/cm) TDS (g/L)Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L) рΗ ORP (mV) Turbidity (FTU)

Air Temperature

(°C)

				-Specific Se Pr	ogram – Sr	oring 2016 S	SW Samplin	g	051
Date ₋	5/12	116	_ Ti	ime <u>/3 5</u> 5	<u>.</u>	Static	n Number	. W.21	2 3 +
Comp	oleted by: _	TO I	3T_		Checke	d by:			
•		•	J	Flow by Cap	ture Meth	<u>od</u>			
	Mogeuren	nent Number		Time	(sec)		Volume	(L)	
	Measuren	tent Number			(000)				
L.	***************************************	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Flow b	y Meter				
	R.E.W	T	<u>ft</u> L	E.W	<u>ft</u> Tot	al Wighth_		ft	
				er of Subsections		ream Width			
	Total	Width (ft)			Subsections	$/\!\!\!\!\!-$	Subsection		
	······································	<2 2 - 4			- 10 - 12		0.2 - 0.3 -		
		4 - 10		12	- 15		0.4 -		
-	1	0 - 20 >20			- 20 - 25		0.7 - 1.0 -		
<u>L</u>	**************************************		Depth of	f Velocity Measur		low Surface)			
	Total De	epth (TD): <2.0	Dft : 0.6TD	(standard setting	rod); >2.0ft	: 0.2TD = (TD	X2) and 0.8TD) = (TD/2)	•
	Distance		Velocity I 0.6 0.8	Measurement 3 (circle)	Distance from	Depth of	Velocity Meas 0.2 0.6	surement 0.8 (circle)	
	from Reference	Subsection No.	Subsect Depth (Reference (or N/A)	Subsection No. (or N/A)		Velocity (30 sec)	
		1							
		2							
		3	/						
		4			\bigvee				
		5	1		0				
		6							
		7	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \						
		8/							
		/9			:				
		10				, 4			
		11							
		12							
		13							
	/	14							

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling
Date 5 / 11 / 16 Arrival Time 17:10
Field Personnel
To BJ Signatures Lot
SITE DESCRIPTION
Station Name Love Pine Creek About Station Name Love Pine Creek Station Number MSTO57
Latitude N ° من ' آزاح `` Longitude W ° من ` الحد ``
Elevation or fite ft Datum NAD 27 Photo Number
Site & Stream Description Small stream charell that has Flodel
over it's panks and put ~1-2" of mutor is the suroday fell
Surface Water Characteristics (color, odor, appearance): ಆರ್ಡಿಕ್ , ಅರ್ಷಿಕ್ ಅತ್ಯಾಗಿ ಅತ್ಯಾಗಿ ಅತ್ಯಾಗಿ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕಿಕ್ಕಾರಿಯ ಕಾರ್ಡಿಕ್ಕ
SAMPLE COLLECTION
Collection Method: 1L bottle, Hørizontal-bottle, Swing-sampler, Other(Y. Up-streamy Across-stream
Sample ID: 1/ 25 CL MAT DELT - 11 E Sample Time: 17/15

	Field Measurements										
Parameter	Sample 1	Sample 2	Sample 3								
Time	17,15										
Water Temperature (°C)	16.7°C										
Specific Conductivity (µS/cm) @ 25° C	412.8										
Conductivity (µS/cm)	347.2										
TDS (g/L)											
Dissolved Oxygen (% sat.)	73.0										
Dissolved Oxygen (mg/L)	7.10										
рН	8,04										
ORP (mV)	11.5										
Turbidity (FTU)	0.99		70								
Air Temperature	51'P										

			ime <u>17:10</u>						
oleted by: _	70 B	T		Checke	d by:		••••		
	,	.)	Flow by Ca						
<u> </u>	***************************************					37-1	(3.)	1	
<u>Measuren</u>	nent Number		Time	e (sec)		Volume	: (L)		
	N.	<u> </u>			1	· · · · · · · · · · · · · · · · · · ·			
				oy Meter					
R.E.W			L.E.W		al Width		ft	<u> </u>	
T-1-	Midt (6)	Numi	ber of Subsection	ns Based on St f Subsections	ream Width	Subsection	Width (ft)		
	Width (ft) \rightarrow <2		8	3 - 10		0.2 -	0.3		
	2 - 4 4 - 10			0 - 12 2 - 15		0.3 - 0.4 -			
	0 - 20	\ \	. 1	5 - 20 0 - 25		0.7 - 1.0 -			
	>20	Depth o	of Velocity Measu		low Surface)				
Total De		0ft : 0.6T	D (standard settir		: 0.2TD = (TD	2TD = (TDX2) and 0.8TD = (TD/2)			
Distance			Measurement <u>8</u> (circle)	Depth of	Depth of Velocity Measurement 0.2 0.6 0.8 (circle)				
from Reference	Subsection No.	Subsec Depth	- \	Reference (or N/A)	Subsection No. (or N/A)		Velocity (30 sec)		
1,577	1				.~				
	2								
	3								
	4				1				
	5								
	6								
	7					1			
	8								
II	9								
		 							
	10			· ·					
	10			ers d			· Park	Andrew Co.	
				Active Control of the			. 1	10	
	11							K	
	11 12							K	

Project P4 Product	tion SE Idaho Mine-Specif	ic Se Program – Spring	2016 SW Sampling
Date 5 / 11	/ 16 Arrival Time	<u> 1600</u>	
Field_Personnel	<u>d</u> s	•	
TE DESCRIPTI	ON		
Station Name <u>Sh</u>	Sipmine creek Be	low Havery Mine	_ Station Number MST06
Latitude <u>N</u>	· ON File .	Longitude_W	° 0N ' "
Elevation <u></u> బా	Fileft Datum	NAD 27 Photo	Number
Site & Stream De:	scription <u>massy</u>	Swamp are	a real to road
Surface Water Ch	aracteristics (color, o	dor, appearance): _	clear with oily
Sheen	nossy lig	LI organice	oder
Sample ID: VOO		Id Measurements	Sample Time: 1620
Parameter	Sample 1	Sample 2	Sample 3
Time	1620		
Water Temperature (°C)	12.6	0	/
Specific Conductivity (µS/cm) @ 25° C	649,5		
Conductivity (µS/cm)	445.5		
TDS (g/L)	770		
Dissolved Oxygen (% sat.)	3,8		
Dissolved Oxygen (mg/L)	0.43	,	
рН	7.60		
ORP (mV)	- 14.7		
Turbidity (FTU)	14.2 NTU		
Air Temperature	51° F		

Projec	t P4 Produc	ction SE Ida	ho Mine-S	pecific Se Pi	rogram – Sr	oring 2016	SW Samplin	g
								MSTOB
Comp	leted by: _	TO 1	35_		Checke	d by:		
	·	1		ow by Cap				
	Measuren	nent Number		Time	(sec)		Volume	(L)
	\							
		\		Flow b	y Meter			
	R.E.W		<u>ft</u> L.E	.w	<u>ft</u> Tot	al Width_		ft
			Number	of Subsections	Based on St	ream Width		
	Total	Width (ft)			Subsections - 10		Subsection 0.2 - 0	
		2 - 4		10	- 12		0.3 - 0	0.4
		4 - 10 0 - 20	$\overline{}$		- 15 - 20		0.4 - 0	
		>20			- 25		1.0 - 2	2.0
1	Total De	nth /TD): <2 (elocity Measur			DX2) and 0.8TD	= (TD/2)
	Distance		Velocity Mea	surement	Distance from		f Velocity Meas 0.2 0.6 0	urement
	from Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A	1 1	Velocity (30 sec)
		1						
		2			\			
		3						
		4						
		5						
		6						
		7						
		8						-
		9						
		10						
		11			7			
		12						
		13					† \	
		14						

No flow , Swamp area

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling Date 5 / 11 / 16 Arrival Time 14.20 Field Personnel Signatures_ TO B-SITE DESCRIPTION Station Name Ballar Creek above Blackfut River Station Number MST 066 Latitude N ° ON 'File " Longitude W ° ON 'File " Elevation or file ft Datum NAD 27 Photo Number _____ Site & Stream Description stream Flowing Throng grassy Favine WIAL Hustoks Surface Water Characteristics (color, odor, appearance): light greenish brown tint, faint agaric alo SAMPLE COLLECTION Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other (). Up-stream / Across-stream Sample Time: 14:25 Sample ID: 1605 SWMST 066- U.F

Field Measurements								
Parameter	Sample 1	Sample 2	Sample 3					
Time	14:25							
Water Temperature (°C)	18.1°C							
Specific Conductivity (µS/cm) @ 25° C	581							
Conductivity (µS/cm)	504							
TDS (g/L)	TC							
Dissolved Oxygen (% sat.)	111.3							
Dissolved Oxygen (mg/L)	10.54							
рН	8.33							
ORP (mV)	27.5	·						
Turbidity (FTU)	1.87							
Air Temperature	43°F	***						

Proje	ect	P4 Produc	tion SE Ida	ho Mine	-Sp	ecific Se Pr	ogram – Sr	oring 2016 S	SW Samplin	ı <u>g</u>	
			116			141:40				r msto	66
Com	ple	eted by: _	70, B	7			Checke	d by:		1.00	
Flow by Capture Method											
	- Constant	Measuren	nent Number			Time	(sec)		Volume	e (L)	
			Э с с том на поставления поставления поставления в поставления в поставления в поставления в поставления в пос	CAMERINE STEPS OF PERSONS	energy were	here with the control of the control	And the Control of th				
									or a little desired them to the control of the cont	and the second s	
		***************************************				Flow b	y Meter		·		
		R.E.W	<u>9,8</u>	<u>ft</u> L	E.	w. <u>1.8</u>	<u>ft</u> Tot	al Width	13.8	ft	···
F				Numb	er o	f Subsections		ream Width	Subsection	Midth (ft)	
-		Total	Width (ft)				Subsections - 10		0.2 -		
			2 - 4				- 12 - 15		0.3 - 0.4 -		
			1 - 10 0 - 20			15	- 20		0.7 -	1.0	
		-	>20				- 25		1.0 -	2.0	
		Total De	nth (TD): <2.(locity Measur andard setting			X2) and 0.8TD) = (TD/2)	
Ž	Γ	, otal bo		Velocity N			Distance		Velocity Meas	surement	
4;5		Distance from	0.2	<u>0.6</u> <u>0.8</u>	(c	ircle)	from Reference			0,8 (circle)	
in riddle of Streem (Also mit possible)	ا2	Reference	Subsection No.	Subsect Depth (Velocity (30 sec)	(or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)	
š.,		1.8	1	0.2		-0.1					
T.		2.3	2	0.2		-0.05					
ا کرد کرد		2.8	3	0		NA					
33.4C		3.3	4	٥							
7.7		3 8	5	0							
33 (4.3	6	0.4	<u> </u>	0.04					
3		Ч.8	7	6.3		6.63					
		5.3	8	0.4		70.0					
1		5.8	9	0.4	:	D 18					
° 42		6.3	10	0.5		0.11					
the possible of		6.8	11	0.5		-0.04					
388	5	7.3	12	.0		NA					
\$? 5		7.8	13	0							
33 (8.3	14	0		1					
	1	8.4	15	0.7		-0-10					
	Ų	9.3		ত য		- 0. (ε					4

Project P4 Production SE Idaho Mine-Specific Se Program – Spring 2016 SW Sampling
Date <u>5 / II / 16</u> Arrival Time <u>15 3o</u>
Field Personnel
To, BJ Signatures 6
SITE DESCRIPTION
Station Name Balland Creek Healnaters Station Number MSTOG
Station Name Dallary Creek Healmarters Station Number 1937 OB
Latitude N ° ON File " Longitude W ° ON File "
Elevation on File ft Datum NAD 27 Photo Number
Site & Stream Description Small Stream cutting through grassy
Feeld
Surface Water Characteristics (color, odor, appearance):
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(). Up-streamy Across-stream
Sample ID: 1605 SWMST067 - U.F. Sample Time: 15:35
•

	Fie	ld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	15:35	\	
Water Temperature (°C)	8.3°C		
Specific Conductivity (µS/cm) @ 25° C	2354		
Conductivity (µS/cm)	1602		
TDS (g/L)	——Ть		
Dissolved Oxygen (% sat.)	60.8		
Dissolved Oxygen (mg/L)	60.8 7.05		
рH	8.10		
ORP (mV)	42.0		10
Turbidity (f ∕TU)	7.22		
Air Temperature	43. E	And the state of t	

ojec 4-	t <u>P4 Produc</u> ら/リ	ction SE Ida	<u>ho Mir</u>	<u>ne-Sp</u> Time	ecific Se Pr	ogram – Sp イン	oring 2 !	<u>2016 S</u> Statio	on Number	9 · MST	06'
mpl	eted by: _	TO 1	31		<u>.</u> .	Checke	d by:				
				Flo	w by Cap	ture Meth	od				
	Measuren	nent Number			Time	(sec)			Volume	· (L)	
	l	l			<u> </u>				1.75		
	2	2			3.65	,			2.20		
	3	3		-	3.08				2.00)	
\				÷	Flow by	<u>y Meter</u>					
	R.E.W		ft	L.E.	W	<u>ft</u> Tot	tal Wi	dth		ft	
			Nur	nber o	f Subsections	Based on St	ream V	Vidth			
	Total	Width (ft)				Subsections			Subsection		
		2 - 4				- 10 - 12		-	0.2 -		
		4 - 10			12	- 15			0.4 -		
	1	>20				- 20 - 25			0.7 - 1.0 -		
		720	Danth	of Vei	ocity Measur		low Su	rface)	,		
	Total De	epth (TD): <2.0							X2) and 0.8TD) = (TD/2)	
					surement	Distance			Velocity Meas]
	Distance	<u>0.2</u>	<u>0.6</u>	<u>0.8</u> (ĉircle) from			<u>0.2</u> <u>0.6</u> <u>0.8</u> (circle)				
	from Reference	Subsection No.	Subse Dept		Velocity (30 sec)	Reference (or N/A)		ection or N/A)		Velocity (30 sec)	
		1									
		2									
		3									
		4				1					
		5									
		6									
		7									
		8									
		9						•		\	
		10								\ \ -	-
		12									
		13.									\ <u>-</u>
		14									\
		<u> </u>	ļ			<u> </u>			1		╢ \

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling Date 5 / 11 / 16 Arrival Time 11:57 Field Personnel Signatures ____ SITE DESCRIPTION Station Name Short Creek Below Ballow Mine Station Number MSTOG9 Latitude N ° DN film Longitude W ° NN film Elevation ON Fileft Datum NAD 27 Photo Number _____ Site & Stream Description street with shallow rocky bottom comining not of the for of wast rock pile Surface Water Characteristics (color, odor, appearance): _______ color_(SAMPLE COLLECTION Collection Method: 1L bottle Horizontal-bottle, Swing-sampler, Other)./Up-stream / Across-stream Sample ID: 16055WMST069 - U. F Sample Time: 12: 15 **Field Measurements** Sample 3 Sample 2 Sample 1 **Parameter** Time 12:15 Water Temperature 10,4 °C. (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity 1129 (µS/cm) TDS 70 (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L) pН ORP (mV) 0.36 NA Turbidity (FTU) Air Temperature (92)

Projec	t P4 Produ	iction SE Id	aho Mine	Specific Se	Program – S	Spring 2016	SW Samplin	<u>g</u>	
								MSTOR	
Comp	leted by:	TO	7357	surte i	Checke	ed by:			
			1	Flow by Ca	apture Meti	<u>nod</u>			
		ment Number		Tin	ne (sec)		Volume	(L)	
		1		4.51			2.75		
	2			4.40			2.50		
		3		4,11					
				Flow	by Meter				
	R.E.W	/, <u> </u>		E.W	·····	tal Width_		ft	
	\		Numbe	r of Subsectio	ns Based on S	tream Width			
	Tota	Width (ft)			of Subsections 8 - 10		Subsection 1		
		2 - 4			10 - 12		0.3 - 0	.4	
		4 - 10 10 - 20			12 - 15 15 - 20		0.4 - 0 0.7 - 1	*******	
		>20			20 - 25		1.0 - 2		
	Total De Distance from		0ft : 0.6TD (Velocity Me	of Velocity Measurement (Ft. Below 5 (D (standard setting rod); >2.0ft : 0.2 (Measurement Distance from			•		
	Reference	Subsection No.	Subsectio Depth (ft)		Reference (or N/A)	Subsection No. (or N/A)		Velocity (30 sec)	
		1							
		2			_				
		3							
		4							
		5							
		6							
		7							
		8							
-		9							
1		10							
		11							
-		12							
		13							
-		14							
							1 X	#	

Date <u>5 / 10 / 16</u> Arrival Time <u>12.09</u>
Field Personnel To BT Signatures CD Signatures
EY
SITE DESCRIPTION Western Valley Creek, below North
Station Name Fook Wools, Valley Cruck Station Number MST089
Latitude N ° o~ 'File " Longitude W ° on 'File "
Elevation on file ft Datum NAD 27 Photo Number 5
Site & Stream Description headowy stream withing through grassy
Surface Water Characteristics (color, odor, appearance): <u>Clear, No clor, slight</u>
SAMPLE COLLECTION
Collection Method: 1L bottle (Horizontal-bottle,)Swing-sampler, Other (Up-stream Across-stream
Sample ID: 1605 SWMST684 - U, F + MS/MSD Sample Time: 12:18

	Field Measurements						
Parameter	Sample 1	Sample 2	Sample 3				
Time	12:18	12:22	12:26				
Water Temperature (°C)	8.9 C	8, 1°C.	9.00				
Specific Conductivity (µS/cm) @ 25° C	456.6	455.6	4 55. 1				
Conductivity (µS/cm)	316.3	1315.9	315.8				
TDS (g/L)	And the state of t	gar all little and all the second					
Dissolved Oxygen (% sat.)	88,3	86.0	85.5				
Dissolved Oxygen (mg/L)	10.2	9,84	9.60				
рН	7.88	7.83	7.82				
ORP (mV)	17,2	18.1	19,3				
Turbidity (FTU)	1.19	0,87	0,99				
Air Temperature (°C)	35 F	35°F	35°F				

Project P4 Production SE Idaho Mine-Specific Se Program – Spring 2016 SW Sampling Date 5 / 10 / 6 Time 12 Station Number MST						
Completed by: 10, 13T, 1	<u> </u>	Checked	by:			
	Flow by Cap	ture Method	<u> </u>			
Measurement Number	Time	(sec)	Volume (L)			
	Section 200	and the second s				
	A Company of the Comp					
All the second sections and the second sections are second sections as the second section section section sections are second sections as the second section s						
Control of the Contro	Flow by		سي سو،			
R.E.W. 14.6 ft	L.E.W. <u>3.7</u>	<u>ft</u> Total	Width 15.5 ft			
Nu	mber of Subsections	Based on Strea	am Width			
Total Width (ft)	Number of	Subsections	Subsection Width (ft)			
<2		· 10	0.2 - 0.3			
2 - 4		- 12	0.3 - 0.4			
4 - 10		- 15 - 20	0.4 - 0.7			
>20		- 25	1.0 - 2.0			
	h of Velocity Measure STD (standard setting		v Surface) 0.2TD = (TDX2) and 0.8TD = (TD/2)			
Depth of Veloc	ty Measurement <u>0.8</u> (circle)	Distance from Reference	Depth of Velocity Measurement 0.2 0.6 0.8 (circle)			

Distance	Depth of Velocity Measurement <u>0.2 0.6 0.8</u> (circle)			Distance from	Depth of Velocity Measurement 0.2 0.6 0.8 (circle)		
from Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)
3.7	1	No Ho	رسد	14.2	No	Flow	
4,4	2	0.2	0,01	14,9	No	flow	
5,1	3	0.5	0,03				
5.8	4	0.6	0.07				·
6.5	5	0,8	0,17				
7.2	6	1.1	0.11				·
7.4	7	1.4	0.07				
8.6	8	1,2	0.11				
9-3	9	1.1	0,02				
10.0	10	0.8	0.04	· · · · · · · · · · · · · · · · · · ·			
10.7	11	0,7	0,00	<u> </u>			
11, 4	12	0.7	0.01				
12.1	13	0,5	-0.02				
12.8	14	0,3	-0.01				
13.5	15	0.2	-0.01				

Date 5 / 10 / 16 Arrival Time 13:40
Field Personnel
TO, EY, BJ Signatures
SITE DESCRIPTION
Wooley Valley Creek above North Station Name Fork wooley Valley Creek Station Number MST090
Latitude N ° ON FILE ″ Longitude W ° ON FILE ″
Elevation ON FILE ft Datum NAD 27 Photo Number 6
Site & Stream Description meanly stream though grassy fell
Surface Water Characteristics (color, odor, appearance):
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(). Up-stream / Across-stream
Sample ID: 160\$ SWMST090 - U,F Sample Time: 13:45

Field Measurements						
Parameter	Sample 1	Sample 2	Sample 3			
Time	13:45					
Water Temperature (°C)	9.4					
Specific Conductivity (μS/cm) @ 25° C	394.0					
Conductivity (µS/cm)	276.9					
TDS (g/L)	70					
Dissolved Oxygen (% sat.)	84.6 1.					
Dissolved Oxygen (mg/L)	84.6 1. 9 .52					
рН	7.91					
ORP (mV)	16.3					
Turbidity (FTU) ペテレ	16.3 0.55 Ntu 35 E					
Air Temperature	35 F					

Projec	t P4 Produc	ction SE Ida	ho Mine-Sp	ecific Se Pr	<u>rogram – Sr</u>	oring 2016 S	SW Samplin	g	
	5/10			<u>3140</u>		Statio	on Number	MSTO9	
Compl	leted by: _	TO, EY.	हुर		Checke	d by:			
				ow by Cap	ture Meth	<u>od</u>			
								125	
	Measuren	nent Number		Time	(sec)		Volume (L)		
	A CONTRACTOR OF THE PARTY OF TH			Flow b			,		
	R.E.W	. <u>3.1</u>		w. <u>o.</u>		al Width_	4.5	ft	
			Number o	f Subsections		ream Width			
	Total	Width (ft)			Subsections - 10		Subsection 0.2 - 0		
<u> </u>		<u><2</u> 2 - 4			- 12		0.3 - (0.4	
		4 - 10			12 - 15 0.4				
	1	0 - 20 >20		15 - 20 20 - 25			0.7 - 1.0 1.0 - 2.0		
<u> </u>			Depth of Ve	locity Measur	ement (Ft. Be	low Surface)			
	Total De	epth (TD): <2.0	0ft : 0.6TD (st	andard setting	g rod); >2.0ft	: 0.2TD = (TE	X2) and 0.8TD	= (TD/2)	
	Distance		Velocity Mea <u>0.6</u> <u>0.8</u> (c	0.8 (circle) from		Depth of	Depth of Velocity Measurement 0.2 0.6 0.8 (circle)		
	from Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)		Velocity (30 sec)	
	0.1	1	No Fle	<u> </u>					
	0.5	2	0.3	0.13	\				
	0,9	3	8.4	0.12					
	1. 3	4	0.5	0,07	\				
	1.7	5	1.1	1.64					
	2. [6	1-2	0.59					
•	2.5	7	0,2	011					
	2.9	8	0,3	0.12					
	3.3	9	03	0.25					
	3.7	10	0.3	0.18					
	3.9	11	0.2	0.20					
	4.1	12	wo t	6					
		13							
		14							

Date 5 1 10 1 16 Arrival Time 11:00
Field Personnel
TO BJ Signatures we Signatures
EY
SITE DESCRIPTION North Fork Wooday Valley Creak Station Name Above Workey Villey Creak Station Number M57872
Station Name Above Works Valley Creek Station Number M31812
Latitude N ° on file Longitude W ° on 'file "
Elevation ft Datum NAD 27 Photo Number 9
Site & Stream Description nearly stream throng tell grave
with con manuer in suranty faileds
Surface Water Characteristics (color, odor, appearance): Lear , abortes s
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(). Up-stream / Across-stream
Sample ID: 1605SWMST 0 92 - U, F Sample Time: 11:00

	Fie	ld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	11:00		
Water Temperature (°C)	11:00 7.3°C		
Specific Conductivity (µS/cm) @ 25° C	564.1		
Conductivity (µS/cm)	373.4		
TDS (g/L)			
Dissolved Oxygen (% sat.)	59.8		
Dissolved Oxygen (mg/L)	7.15		
рН	7.62		
ORP (mV)	-74.0		
Turbidity (NTU)	1.38 NTU		To
Air Temperature	35 F		

rojec	t P4 Produc	tion SE Ida	ho Mine-Sp	ecific Se Pr	ogram – Sr	oring 2016 S	SW Sampling	9	
ate _	5 / 10	1 16	Time	<u> </u>	3	Statio	n Number	MST	
lamo	eted bv:	TO, EY	, 35		Checke	d by :			
			ı	ow by Cap					
,			<u> </u>	ow by Cap	ture metri	<u>- </u>		70	
	Measurement Number			Time	(sec)		Volume	(L)	
							· · · · · · · · · · · · · · · · · · ·		
						:			
<u></u>									
				Flow b					
	R.E.W	.0.1	<u>ft</u> L.E.	w. <u>9.6</u>	<u>ft</u> Tot	al Width	10.5	ft	
				of Subsections					
	Total	Width (ft)			Subsections		Subsection 0.2 - 0		
		<2 2 - 4			- 10 - 12		0.3 - 0).4	
		4 - 10			-15		0.4 - 0		
	1	<u>0 - 20</u> >20			- 20) - 25		(0.7) (P.6) 1.0 - 2.0		
	Distance		Velocity Mea	TD (standard setting rod); >2.0ft : 0.2T y Measurement Distance from			Depth of Velocity Measurement 0.2 0.6 0.8 (circle)		
	from Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)	
	0.1	1	0.2	0.02	1				
	0.85	2	0.4	0.01	No.				
	1.5	3	0.5	0.04					
	2.2	4	0.6	0.01	*				
	2.9	5	0.5	0.03		1	·		
	2.9	6	0.6	0.01					
	4.3	7	0.7	0.12		1.			
	5.0	8	0.7	0.35		1			
	5.7	9	0.75	0.08			1		
	6.4	10	0.6	0.03					
	7.1	11	0.5	0.18	,				
	7.8	12	0.3	0.01			To the state of th		
	8.5	13	0.1	- 0,01				\-\-\-	
	9.2	14	0.2	.01				10	
	1 016	15	1	- Commission of the Commission	1		1	N	

60 - No Fli

[Date 5 /10 / 14 Arrival Time 16:20
_	1
_	TD, BJ, EY Signatures LD
_	
SIT	Spring Ful trib # 1 of N Fook Washey Station Name Valley Cr. below Belled Man Station Number MET 094
5	Station Name Valley Cr. below Belled Man Station Number MST894
ı	Latitude N ° PP - Lile " Longitude W ° PN - Lile "
1	Elevation of the fit Datum NAD 27 Photo Number 10
:	Site & Stream Description strain forces and colvered
-	Surface Water Characteristics (color, odor, appearance):
•	Sulface water characteristics (color, each, appearance)
SA	MPLE COLLECTION
+	Collection Method: 1L bottle Horizontal-bottle, Swing-sampler, Other(). Up-stream Across-stream
	Sample ID: 1605 SWMST 094 - U, F Sample Time: 16:27

	Fiel	ld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	16:27	1	
Water Temperature (°C)	11.0°C		
Specific Conductivity (µS/cm) @ 25° C	330.0		
Conductivity (µS/cm)	241.6		
TDS (g/L)	P		
Dissolved Oxygen (% sat.)	74.3		
Dissolved Oxygen (mg/L)	8.05		
рН	7.84		
ORP (mV)	20.0		
Turbidity (FTU)	20.0 0.65 NTU 35 F		
Air Temperature (°C)	35 F		160

Project <u>P4 Production SE Idaho Mine</u> Date <u> </u>	me <u>1630</u>	
Completed by: TO B()	Checked	by:
1	Flow by Capture Metho	od .
Measurement Number	Time (sec)	Volume (L)
Measurement Number	Time (sec)	Volume (L)

Flow by Meter

3,35

R.E.W	<u>ft</u> L.E.W	<u>tt</u> lotal Wid	rtnπ
	Number of Subsect	ions Based on Stream W	idth
Total Width (ft)	Numbe	r of Subsections	Subsection Width (ft)
<2		8 - 10	0.2 -,0:3
2 - 4	•	10 - 12	0,3 - 0.4
4 - 10		12 - 15	0.4 - 0.7
10 - 20		15 - 20	0.7 - 1.0
>20		20 - 25	1.0 - 2.0

Depth of Velocity Measurement (Ft. Below Surface)

Total Depth (TD): <2.0ft : 0.6TD (standard setting rod); >2.0ft : 0.2TD/= (TDX2) and 0.8TD = (TD/2)

Distance from	Depth (1D): <2.0	Velocity Meas	surement	Distance from		Velocity Meas	
Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)
	1			/			
	2			,			
	3						
	4						
	5						
	6						
	7						
	8			-			
	9						
	10						
	/ 11						
	12						
	13						
/	14					,	
	15						

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling Date $\frac{5}{10}$ / $\frac{1}{10}$ Arrival Time $\frac{11.10}{10}$ Field Personnel TO, BJ Signatures COL SITE DESCRIPTION Spring fel Trib, #2 of N. Fork Waley Station Name Valley Creek, below Balland Mine Station Number MSTO 95 Latitude N ° ou 'Lile " Longitude W • ° ou 'Lile Elevation or file ft Datum NAD 27 Photo Number -Site & Stream Description Small Stream with greasy backs Cau manuer in stream bed Surface Water Characteristics (color, odor, appearance): SAMPLE COLLECTION Collection Method: 1L bottle Horizontal-bottle Swing-sampler, Other(1/ Up-stream DAcross-stream Sample ID: 1605 SWMST095-U, F Sample Time: 11'.20

	Fie	ld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	11/20		
Water Temperature (°C)	11.8°C		
Specific Conductivity (µS/cm) @ 25° C	945		,
Conductivity (µS/cm)	707		
TDS (g/L)	Section of the sectio		
Dissolved Oxygen (% sat.)	77.0		
Dissolved Oxygen (mg/L)	8,15		
рН	7.88		
ORP (mV)	17.7		
Turbidity (FTU)	0.39	Agrican .	
Air Temperature (°C)	43°C		Tas

<u>5 / 11</u>	116	_ Ti	me _	11:30		Stat	ion Number	MS	
eted by: _	To B				Checke	d by:			
	,				ture Meth	<u>od</u>			
Measurer	ment Number	*********		Time	(sec)		Volume	(L)	
1				1,40	2		5,5L		
				1,8	1		6,0L 5.5L		
	3			1.58	3		5.5L		
				Flow by	y Meter				
< R.E.₩	/,	<u>ft</u> L	.E.W.	•	<u>ft</u> Tot	al Width_		ft	
		Numbe	er of S	ubsections	Based on St	ream Width			
	l Width (ft) <2		<u> </u>		Subsections - 10		Subsection 0.2 - 0		
	2 4			10	- 12		0.3 - ().4	
	4 - 10 10 - 20		12 - 15 15 - 20				0.4 - 0.7 0.7 - 1.0		
	>20		20 - 25				1.0 - 2.0		
		Depth of	Veloc	ity Measure	ement (Ft. Be	low Surface)		
Distance	Depth of		(stand Measur	dard setting ement	prod); >2.0ff Distance from	: 0.2TD = (1) DX2) and 0.8TD of Velocity Meas <u>0.2 0.6 0</u>	urement	
	Depth of	off : 0.6TD Velocity M 0.6 0.8	(stand fleasur (circl	dard setting ement	g rod); >2.0ff Distance	: 0.2TD = (1	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of <u>0.2</u> Subsection	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of 0.2 Subsection No.	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of 0.2 Subsection No.	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of 0.2 Subsection No. 1	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of 0.2 Subsection No. 1 2 3	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of 0.2 Subsection No. 1 2 3	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of 0.2 Subsection No. 1 2 3 4	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of 0.2 Subsection No. 1 2 3 4 5	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of 0.2 Subsection No. 1 2 3 4 5 6	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of 0.2 Subsection No. 1 2 3 4 5 6 7	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>I.8</u> (circle) Velocity	
Distance from	Depth of 0.2 Subsection No. 1 2 3 4 5 6 7 8	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement	
Distance from	Depth of 0.2 Subsection No. 1 2 3 4 5 6 7 8 9 10	Off : 0.6TD Velocity M 0.6 0.8 Subsecti	(stand fleasur (circl	dard setting ement le) Velocity	g rod); >2.0ff Distance from Reference	: 0.2TD = (1 Depth Subsectio	DX2) and 0.8TD of Velocity Meas 0.2 0.6 0 Subsection	urement <u>1.8</u> (circle) Velocity	

Date <u>51 10 1 16</u> Arrival Time <u>147, 35</u>
Field Personnel
10. EY, BJ Signatures CL
SITE DESCRIPTION Tributary of North Fork Woolay Vally
Station Name Creek, below Belland mine Station Number NIS/ 896
Latitude N ° EN file " Longitude W ° DN ' file "
Elevation of the Datum NAD 27 Photo Number
Site & Stream Description Stream with grass wide
and shellow with small changeds within
Surface Water Characteristics (color, odor, appearance): Manuer of Contract Clear
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(). Up-stream / Across-stream
Sample ID: 1405 SWMSTO 96-0 F Sample Time: 14140

	Fiel	d Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	14:40		
Water Temperature (°C)	13,2		
Specific Conductivity (µS/cm) @ 25° C	664		
Conductivity (µS/cm)	514		
TDS (g/L)	William Market and the Commence of the Commenc		
Dissolved Oxygen (% sat.)	108,7		
Dissolved Oxygen (mg/L)	11.29		
рН	8.38		
ORP (mV)	10.8		
Turbidity (FTU)	2.28		
Air Temperature (°C)	35° F		

5/10	116	_ Time	<u> </u>	<u>5</u>	Stati	on Number	MSI	
leted by:	TO, 37	T, EY		Checke	d by :			
•		Flo	w by Cap	ture Meth	<u>od</u>			
Measure	ment Number		Time	(sec)		Volume	(L)	
			ો.(<u> 3.c</u>	<u> </u>	
	3 3		1 0 (2		3.5	<u> </u>	
	3		2.0	05		3.C 3.S 3.	15	
			Flow b	y Meter				
R.E.V	V	<u>ft</u> L.E.	w	<u>ft</u> Tot	al Width_		ft 1	
		Number o	f Subsections	Based on St	ream Width			
Tota	ıl Width (ft)			Subsections		Subsection		
	<2 2 - 4			- 10 - 12		0.3 - 0		
	4 - 10		12	- 15		0.4 -	0.7	
	10 - 20			- 20		0.7 - 1.0 1.0 - 2.0		
	>20			- 25			E.U	
	Depth of	0ft : 0.6TD (st	andard setting surement	Distance	: 0.2TD = (T	OX2) and 0.8TD f Velocity Meas	urement	
Distance from	<u>0.2</u>	<u>0.6</u> <u>0.8</u> (c		from Reference		<u>0.2 0.6 0,8</u> (circle)		
Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	(or N/A)	Subsection No. (or N/A)		Velocity (30 sec)	
	1							
	2		p. Market		•			
	3							
	4	g. g						
	- 5							
	6							
	7/		` .					
	/8		6. 2.4	7				
	9		· ·	<u> </u>				
	10							
	11			1				
and the second s	12		į					
	13							
a ·	14	1	1 *	■ 1 1	1	ı	Ī.	

Date 5 / 13 / 16 Arrival Time 10'. 15
Field Personnel
1. Osborw Signatures 6 8
B. Jones
SITE DESCRIPTION
Station Name Angus Craw about Raispubsion Station Number MST 128
Latitude N ° DO Fire Longitude W ° DO Fire "
Elevation Datum NAD 27 Photo Number
Site & Stream Description Brakel Stream Cotting Through
villous and grass
Surface Water Characteristics (color, odor, appearance):
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(Up-stream / Across-stream
Sample ID: 16055WMST128-U, F Sample Time: 10:20

100000000000000000000000000000000000000	Fie	ld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	10',20		
Water Temperature (°C)	9.70		
Specific Conductivity (µS/cm) @ 25° C	446		
Conductivity (µS/cm)	315.6		
TDS (g/L)	70		
Dissolved Oxygen (% sat.)	E1.8%		
Dissolved Oxygen (mg/L)	9.15		
рН	8.00		
ORP (mV)	41.3		
Turbidity (EIU)んてい	4,50 NTU 50 F		12
Air Temperature (°C)	50 F		

5/13	1 16	_ Time	1030	<u> </u>	St	atio	n Number	MS
	10, 6							
			ow by Cap		<u>od</u>			
Measurer	nent Number		Time	(sec)			Volume	(L)
		- A						
			Flow b	v Meter			· · · · · · · · · · · · · · · · · · ·	
R.E.W	1.8.5	<u>ft</u> L.E.	w. <u> </u>		al Widt	:h	13.9	ft
		Number c	f Subsections	Based on St	ream Wi	lth		
Total	Width (ft)		Number of Subsections			Subsection Width (ft) 0.2 - 0.3		
	<2 2 - 4		8 - 10 10 - 12			0.2 - 0.3		
	4 - 10		12 - 15			0.4 - 0.7 0.7 - 1.0		
	10 - 20 >20		15 - 20 20 - 25			1.0 - 2.0		
Total De	epth (TD): <2.6		locity Measure				X2) and 0.8TD) = (TD/2)
Distance	Depth of	Velocity Mea	surement	Distance from			Velocity Meas	
from Reference	0.2 Subsection	0.6 0.8 (c	Velocity	Reference	Subsec		Subsection	Velocity
	No.	Depth (ft)	(30 sec)	(or N/A)	No. (or	N/A)	Depth (ft)	(30 sec)
1.0	1	0.3	-0.21	9.5	-O-+	16	0.23	0.23
1.5	2	6.7	0.11					
2.0	3	1-1	-0,11					
2.5	4	11:02	1-2044					
3-0	5	1.1	1.53					
	6	1.1	2.22					
3.5					1		Ī	1
3.5 4.0	7	1. (2.65					
	7 8	1. [2.65					

1.65

1.51

0.81

0.64

0.33

0.32

0.9

6.7

0.5

0.4

0.25

0.2

12

13

14

5:5

6.0

6.5

7.0

7.5

8.0

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling Date 5/13/16 Arrival Time 9:45 Field Personnel Ti Oshow Signatures 4 SITE DESCRIPTION Rasmissen Creek above Anyes Creek Station Number MST131 Station Name Longitude W Latitude N Elevation w The ft Photo Number __ Datum NAD 27 Site & Stream Description ________ Surface Water Characteristics (color, odor, appearance): _ SAMPLE COLLECTION Across-stream Collection Method: 1L bottle, Aorizontal-bottle, Swing-sampler, Other(X. Up-stream/ Sample Time: 0950 Sample ID: 1605500 **Field Measurements** Sample 3 Sample 1 Sample 2 **Parameter** Time Water Temperature (°C) **Specific Conductivity** (µS/cm) @ 25° C Conductivity 266.0 (µS/cm) TDS -70 (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L) рΗ ORP (mV) Turbidity (ETU)-NITO

Air Temperature

					e-Sp: 	ecific Se Pro	ogram – Sp	ring 2016 S	SW Sampling	1 M27) 1		
Date	<u> </u>	5/13	16	_ 1	ime	095	<i>C</i> ³	Static	n Number	シックロ		
Con	nple	eted by: _	TO BI				Checked	d by:				
			, 9		Flow by Capture Method							
 -				·								
-		Measurem	ent Number			Time	sec)	accent to the control of the control	Volume (L)			
-						and the second s						
			- servener	and considerate and and	Mary Mary Mary Mary Mary Mary Mary Mary							
L		- Comment	and the same of th		1778							
7	a paragrama de la constanta de	and a second will be the second secon	១ វ			Flow by						
		R.E.W	8.9	ft	L.E.	w. <u>3.7</u>	<u>ft</u> Tot	al Width	13.3	ft		
Ī				Num	ber o	f Subsections		ream Width		ANGULE (FA)		
		Total	Width (ft) <2				Subsections 10		Subsection 0.2 -			
			2 - 4			10	- 12		0.3 - 0.4			
			1 - 10		12 - 15 15 - 20				0.4 - 0.7 0.7 - 1.0			
1			0 - 20 >20		20 - 25				1.0 -	2.0		
L	Depth of Velocity Measurement (Ft. Below Surface) Total Depth (TD): <2.0ft : 0.6TD (standard setting rod); >2.0ft : 0.2TD = (TDX2) and 0.8TD = (TD/2)											
	F	Total De										
	Depth of Velocity Distance 0.2 0.6 0					surement ircle)	Distance from	Debtilo	Depth of Velocity Measurement 0.2 0.6 0.8 (circle)			
		from Reference	Subsection	Subsec		Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)		Velocity (30 sec)		
			No. 1	Depth			(4.1.1.7)			•		
		3.7	2	0,2		-0.09						
		4.1		v . 1		-0.03						
		4.5	3	0 4		0.15						
		4.9	4	0.		0.01						
o Flow Bo		5.3	5	NA	<u> </u>	NA						
23/		5.7	6	0.	۲	0.02						
		6.1	7	1.0		0.88						
	,	6.5	8	1.3	<u></u>	1.11						
		6.9	9	1.	<u>Z_</u>	1.63		<u> </u>				
		7.3	10	0.	8	0.44						
	ŗ	7.7	11	Ø.	6	-0.03						
NOF	اللا	8.1	12	٥.	}	NA						
(Br)		8.5	13	N		NA						
	7	8.9	14	NI	7	AN						
			15									

Date 5 / (3 / (6 Arrival Time 09 10
Date 5 / 65 / 66 Arrival Time Of 10
Field Personnel
T. OSbow Signatures Color
B. Jones
SITE DESCRIPTION Angus creek Above No Now Station Name Creek Below Russin SSEN Creek Station Number MST 132
Station Name Creek Below Russin SSEN Creek Station Number MS [132
Latitude N ° ON FIL " Longitude W ° ON FIL "
Elevation 3N 1 ft Datum NAD 27 Photo Number
Site & Stream Description Meanhory Stream Catty Though
grasy mealand with willows
Surface Water Characteristics (color, odor, appearance): _) ty , ~ o ~ o ~ o ~ o ~ o ~ o ~ o ~ o ~ o ~</th
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle Swing-sampler, Other(Up-stream Across-stream
Sample ID: 1605 Swms T132 - 1,2 - U, F Sample Time: 0915

Field Measurements									
Parameter	Sample 1	Sample 2	Sample 3						
Time	0915	0920							
Water Temperature (°C)	7.8'C	7.8°C							
Specific Conductivity (µS/cm) @ 25° C	309.0	308.0							
Conductivity (µS/cm)	205,8	203.7							
TDS (g/L)		70							
Dissolved Oxygen (% sat.)	79.5	M9,6							
Dissolved Oxygen (mg/L)	9.73	9.33							
рН	7.85	7.85							
ORP (mV)	55.0	54.6							
Turbidity 作で べてい	5,41 NTU	5.63 MTU							
Air Temperature	50'F	SOF	\						

5113166	Mine-Specific Se Program – Spring Time <u>043</u> 会	
npleted by:	Checked by	/:
	Flow by Capture Method	10
Measurement Number	Time (sec)	Volume (L)
	AND	
· ·		
and the second s		
and the same of th	Flow by Meter 12	O
R.E.W. 17.8 ft	Flow by Meter 13	
		/ldthft
	L.E.W. 14 8 ft Total W	/ldthft
	L.E.W. ft Total W Number of Subsections Based on Stream Number of Subsections 8 - 10	/idth
Total Width (ft)	L.E.W. ft Total Wounder of Subsections Based on Stream Number of Subsections 8 - 10 10 - 12	Width Subsection Width (ft) 0.2 - 0.3 0.3 - 0.4
Total Width (ft) <2 2 - 4 4 - 10	Number of Subsections Based on Stream Number of Subsections 8 - 10 10 - 12 12 - 15	Width Subsection Width (ft) 0.2 - 0.3 0.3 - 0.4 0.4 - 0.7
Total Width (ft) <2 2 - 4	L.E.W. ft Total Wounder of Subsections Based on Stream Number of Subsections 8 - 10 10 - 12	Width Subsection Width (ft) 0.2 - 0.3 0.3 - 0.4

Distance from	Depth of <u>0.2</u>	Velocity Meas 0.6 0.8 (c		Distance from	Depth of Velocity Measurement <u>0.2</u> <u>0.6</u> <u>0.8</u> (circle)				
Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)		
13.8	1	1.5	0.34						
14.2	2	1.5	0.88						
14.6	3	1.5	1.22						
15.0	4	1.6	1.22						
15.4	5	1.6	1.23						
15.8	6	1.6	1.51						
16.2	7	1.6	1.46						
16.6	8	0. ๆ	1.51						
17.0	9	0.9	1.22	! :					
174	10	0.9	1.00						
17.8	11	1.0	0.54						
	12								
	13				*** *				
	14								
	15								

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling
Date 5 1 13 1 16 Arrival Time 13:20
Field Personnel
Field Personnel T. Osbor N Signatures Control Signatures
B. Jones
SITE DESCRIPTION Rasmussen Creek below Enoch Station Name Station Number Station Number Station Number
Station Name Station Number Station Number
Latitude N ° ON File Longitude W ° ON File "
Elevation On the Datum NAD 27 Photo Number
Site & Stream Description Meanway stream Nisth of Road
coty tuch tall grass
Surface Water Characteristics (color, odor, appearance): 1947 Brown +in
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(). Up-stream / Across-strea
Sample ID: 1605 SWM ST 133 Sample Time: 1325
Field Measurements

Field Measurements									
Parameter	Sample 1	Sample 2	Sample 3						
Tìme	1325								
Water Temperature (°C)	18.6								
Specific Conductivity (μS/cm) @ 25° C	299.9								
Conductivity (µS/cm)	263.3								
TDS (g/L)		δ							
Dissolved Oxygen (% sat.)	84.5								
Dissolved Oxygen (mg/L)	7.77								
рН	7.88								
ORP (mV)·	26.5								
Turbidity.	16.2 NTU								
Air Temperature	50		1						

5/13	1 16		Time	13.4	D	St	tatio	SW Samplin n Number	MS'	
eted by: _	TO B	J_			Checked	d by: _				
	·		Flo	w by Cap	ture Meth	<u>od</u>		-	4	
Measurem	ent Number			Time	(66 6)			Volume	(L)	
				Flow by				D 0		
R.E.W	6.5			w. <u>(. 3</u>		al Wid		17.0	ft	
Tatal	\Alid4b /f4\	Num	mber of Subsections Based on Stream \ Number of Subsections				Subsection Width (ft)			
Total	Width (ft) <2		8 - 10				0.2 - 0.3			
	2 - 4 4 - 10		10 - 12 12 - 15				0.3 · 0.4 0.4 - 0.7			
	0 - 20		15 - 20				0.7 - 1.0			
	>20		20 - 25 of Velocity Measurement (Ft. Below St				1.0 - 2.0			
Total De	pth (TD): <2.	Depth 0ft : 0.61	of Ve ΓD (st	locity Measur andard setting	ement (Ft. Bel g rod); >2.0ft	ow Surt : 0.2TD	ace) = (TD	X2) and 0.8TD	= (TD/2)	
Distance	Depth of		y Mea	surement	Distance from		Depth of Velocity Measurement <u>0.2</u> <u>0.6</u> <u>0.8</u> (circle)			
from Reference	Subsection No.	Subse Depth		Velocity (30 sec)	Reference (or N/A)	Subse No. (or		1	Velocity (30 sec)	
1.3	1	N.	,	16v						
	2	0.1		0.23						
1.7	3		•		\					
1.7	3	0.	<u> </u>	0.26					i	
1.7 2.1 2.5	4	0.		0.31						
2.5			4	0.31						
2.5 2.9	4	0.	4 4							
2.5 2.9 3.3	5	0.0	4 4 5	0.31			\ \			
2.5 2.9	5 6	0.0	4 4 5 6	0.31						

10

11

12

13

14

15

5.3

0.5 0.56

0.4 0.77

0.4 0.56

0.36

0.30

0.3

0.3

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling

Date 5/12/6 Arrival Time 14.20

Field Personnel

T. Chock Signatures

Signatures

Signatures

Signatures

Site DESCRIPTION

Station Name Enach Vallay Mine Shap Pool Station Number

Latitude N ow file Longitude W of File Color Site & Stream Description Mad 27 Photo Number

Source Water Characteristics (color, odor, appearance): Clear Stream Across-stream Sample ID: 1605 SWM 5T 136 - U, F Sample Time: 17.25

	Fie	ld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	14.145		
Water Temperature (°C)	18.3°C		
Specific Conductivity (µS/cm) @ 25° C	391.6		
Conductivity (µS/cm)	343.3		
TDS (g/L)	TO		
Dissolved Oxygen (% sat.)	42.7		
Dissolved Oxygen (mg/L)	3.90		
pН	7.49		
ORP (mV)	29.4		
Turbidity (ETU) NCV	6.59 NO		
Air Temperature	BIF		1

5/17	2/16	_ Tim	e <u>1475</u>	<u> </u>	Statio	n Number	MST		
eted by	TO.	BJ		Checke	d by:	<u> </u>			
	•	. <u>Fl</u>	ow by Cap	ture Meth	<u>od</u>				
Measu	rement Number		Time	(sec)		Volume	(L)		
					1				
$\overline{}$									
			<u> </u>						
			Flow by				E4		
R.E	.w		.W of Subsections				ft		
Ta	tal Width (ft)	Kumper		Subsections		Subsection	Width (ft)		
<u> </u>	<2			- 10 - 12		0.2 -			
	2 - 4 4 - 10		12	- 15		0.4 -	0.7		
	10 - 20 >20			- 20 - 25		0.7 - 1.0 -			
		Depth of V	Nocity Measure	ement (Ft. Be	low Surface)		(TD/2)		
Total	Depth (TD): <2.			·					
Distance		Velocity Mea 0.6 0.8 (ty Measurement Distance 0.8 (circle) from		Deptiloi	Depth of Velocity Measurement <u>0.2 0.6 0.8</u> (circle)			
from Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)		
	1								
	2								
	3								
	4	ļ <u></u>							
	5				<u> </u>				
	7								
	8				 \ 				
	9								
1	10								
	11								
	12								
	13								
1	14								
	9								

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling Date 5 / 13 / 16 Arrival Time 11:30 Field Personnel T. Odom SITE DESCRIPTION East fork Rismusson Creek above Station Name Rasmusser Creck Station Number MST 143 Longitude W ° ON EL Elevation on the ft Photo Number ____ Datum NAD 27 Site & Stream Description Shallow Love to describer the range grassy fill, lots of CON MANURE Surface Water Characteristics (color, odor, appearance): Light brown 5:14 SAMPLE COLLECTION Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(Y. Up-stream / Across-stream Sample ID: 1605 SWMST 143 - U. F Sample Time: 1135

	Field Measurements										
Parameter	Sample 1	Sample 2	Sample 3								
Time	1135										
Water Temperature (°C)	11.3°C										
Specific Conductivity (µS/cm) @ 25° C	139.6										
Conductivity (µS/cm)	103.0										
TDS (g/L)											
Dissolved Oxygen (% sat.)	76.0										
Dissolved Oxygen (mg/L)	8,31										
рН	7.60										
ORP (mV)	41.8										
Turbidity (FTU) MTU	18.4 NTU										
Air Temperature (°C)	50 F	,•									

Project	t P4 Produc	tion SE Idal	no Mine-S	Specific Se Pr	ogram – Sp	ring 2016 S	W Sampling	g		
Date	5/13	/ 16	_ Tin	ne <u>11:46</u>		Statio	n Number	MST		
Compl	eted by: _	TO/BJ	<u> </u>		Checked	d by:				
			E	low by Cap	ture Meth	<u>od</u>				
	Measurem	ent Number		Time	(sec)		Volume	(L)		
				2.53			<u>0.35</u>			
	7 3			2.53 2.55 毫 2.			0.40			
	3			多 2.	<u> </u>		0.48			
D.				Flow by	y <u>Meter</u>					
	R.E.W	•	<u>ft</u> L.	E.W		al Width		ft		
			Numbe	r of Subsections		ream Width)AU-J41- (f4)		
	Total	Width (ft)			Subsections - 10		Subsection 0.2 -			
-		<2 2 - 4			- 12		0.3 - 0.4 0.4 - 0.7 0.7 - 1.0			
		4 - 10			- 15					
-		Q - 20 >2Q			- 20 - 25		1.0 - 2.0			
	Total De Distance from		Velocity M 0.6 0.8	easurement (circle)	g rod); >2.0ft Distance from Reference	: 0.2TD = (TDX2) and 0.8TD = (TD/2) Depth of Velocity Measurement 0.2 0.6 0.8 (circle				
	Reference	Subsection No.	Subsection Depth (ft	velocity (30 sec)	(or N/A)	Subsection No. (or N/A)		Velocity (30 sec)		
		1								
		2								
		3								
		4								
		5		\						
		6								
		7								
		8								
		9								
		10								
		11								
		12								
		13								
	<u> </u>	14	-							
	 	15	 							

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling Date 5 / 13 / 16 Arrival Time 19 20 Field Personnel T. Obow Signatures W SITE DESCRIPTION Station Name West Poul Creek heal waters, below Station Number MST144 Latitude N ° OF ' file " Longitude W ° DN ' file Elevation Del File ft Datum NAD 27 Photo Number Site & Stream Description Sees forming a small stream Rayort clear SAMPLE COLLECTION Collection Method: 1L bottle, (Horizontal-bottle, Swing-sampler, Other(), Up-stream), Across-stream Sample Time: 1325 Sample ID: 1605 SWMST144-U.F Field Measurements Sample 3 Sample 1 Sample 2 Parameter 1425 Time Water Temperature Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS TO. (g/L) Dissolved Oxygen 57.0 (% sat.) **Dissolved Oxygen** (mg/L) рΗ ORP (mV) Turbidity (FTU) NTU

Air Temperature (९६),′ ►

Project P4 P	roduct	tion SE Idah	no Mi	ne-Sp	ecific Se Pr	ogram – Sp	ring 2016 S	W Sampling	
Date <u>5</u> /	13	116		Time	14:3	35	Statio	n Number_	MST 144
Completed I	by:	TO 3.	5_	····		Checked	i by:		
					w by Cap	ture Metho	<u>od</u>		
Mea	surem	ent Number	*****		Time	(sec)		Volume	(L)
	ł				2.15			1.5	
	2				2.2	5		<u>1.25</u>	<u> </u>
	3			<u> </u>	2.2	D		1.5	
		<u> </u>			Flow by	<u>/ Meter</u>			
F	R.E.W	•	ft	L.E.	w	<u>ft</u> Tot	al Width		ft
	_		Nu	ımber o	f Subsections	Based on Sti	ream Width	Subsection !	Midth (ff)
	Total	Width (ft)		-		Subsections - 10		Subsection 0.2 - 0	
		2 - 4			10	- 12		0.3 - 0	
		- 10				- 15 - 20		0.4 - 0	
		0 - 20 >20		 		- 25		1.0 - 2	
	otel Do	nth (TD): <2 (ept	h of Ve	locity Measur	ement (Ft. Bel a rod): >2.0ft	low Surface) : 0.2TD = (TD	X2) and 0.8TD	= (TD/2)
Dista		Depth of	Veloc		surement	Distance from	Depth of	Velocity Meas 0.2 0.6 0	urement
fro		0.2 Subsection				Reference	Subsection		Velocity
Refer	rence	No.		th (ft)	(30 sec)	(or N/A)	No. (or N/A)	I I	(30 sec)
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		2		·					
		3			<u> </u>				
		4							
	·	5							
		6							
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		9						T	
		10						110	
		11							
-		12							
		13							
-		14				· va			
 		15							

Date 5 / 12 / 16 Arrival Time 16.30
Field Personnel
T. Osbew Signatures LEC
B. Joves
SITE DESCRIPTION
Station Name Tributary to Lave Pine Creek Station Number MST 226
Station Name Tributary to Love Pine Creek Station Number MST 226 Latitude N ° ON 'L' Longitude W ° ST ' PIL "
Elevation v f a ft Datum NAD 27 Photo Number
Site & Stream Description water flowing out of same (poul
Through grass of mass
Surface Water Characteristics (color, odor, appearance):
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(). Up-stream / Across-stream
Sample ID: 160.55 SWM5T226-U, F + MS/MSD Sample Time: 16 50
•

	Field Measurements												
Parameter	Sample 1	Sample 2	Sample 3										
Time	1650	1655	1700										
Water Temperature (°C)	7.4°C	7.46	7.40										
Specific Conductivity (µS/cm) @ 25° C	353.4	353.5	353.8										
Conductivity (µS/cm)	235.2	234.6	234.9										
TDS (g/L)			70										
Dissolved Oxygen (% sat.)	20-6	75.2	74.8										
Dissolved Oxygen (mg/L)	9.44	8.94	8.84										
рН	7.26	7.16	7.04										
ORP (mV)	58.4	60,7	63.8										
Turbidity (FTU) WT	2,64	0.92	0,62										
Air Temperature	63°E	63'F	63'F										

Proj	ject <u>P4 Produc</u> e <u>5 /12</u>	ction SE Idah	no Mine-Sp	ecific Se Pr	ogram – Sp -`>	oring 2016 S	SW Samplin	g	226
	npleted by:								
			Flo	w by Cap	ture Metho	<u>od</u>			
	Measuren	nent Number		Time	(sec)		Volume	(L)	
		(,58			4.56		
	~	2,		1,48			4.5L		
		3		1.48			4.5 L		
ί.	R.E.W				<u>ft</u> Tot	al Width		ft	
[Number o		Based on Str	ream Width		1.00	
	Total	Width (ft)			Subsections - 10		Subsection 0.2 -		
		2 - 4			- 12		0.3 -		
		4 - 10			- 15		0.4 -		_
.	1	>20			- 20 - 25		0.7 - 1.0 -		
Į.		720	Donth of Vol	/	ement (Ft. Bel	ow Surface)			
	Total De	pth (TD): <2.0					X2) and 0.8TD	= (TD/2)	-
	Distance from		Velocity Mea: <u>0.6</u> <u>0.8</u> (c		Distance from Reference		Velocity Meas 0.2 0.6 () <u>.8</u> (cìrcle)	
	Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	(or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)	

Distance	Depth of <u>0.2</u>	Velocity Meas <u>0.6</u> <u>0.8</u> (c	urement ircle)	Distance from	Depth of	Velocity Meas 0.2 0.6 (urement) <u>.8</u> (circle)
from Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)		Velocity (30 sec)
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	3						
	4				\		
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	6			•			
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	8						
	9						
	10						
	11					\	
	12						
	13						
	14						
	15						

	A Marina Time	ne (7 30	
Date <u>5 / 13 /</u>	Arrival IIII		,
Field Personnel			
T. Osborn		Signatures	A
B. Jones			
TE DESCRIPTIO	N. O. I. e	and a seale	
Eastion Name	Head water	essimper cheek	tation Number M5T269
Station Name	or the	<u>″</u> Longitude <u>W</u>	· on · file "
		NAD 27 Photo Num	
Site & Stream Desc	ription	Dry grassy	RAVIDA .
AMPLE COLLEC	and the same of th		
Collection Method:	1L bottle, Horizontal-l	bottle, Swing-sampler, Other().(Up-stream / Across-stre
Sample ID: 1/205	SWMST26°	1-U, F).(Up-stream / Across-stream / Across-stream / Across-stream / Across-stream / Across-stream / Across-stream /
Sample ID: 1605	SWMST26°	Field Measurements	Sample Time:
Sample ID: 1605	SWMST26°	1-U, F).(Up-stream / Across-stre
Sample ID: 160 F	SWMST26°	Field Measurements	Sample Time:
Parameter Time Water Temperature	SWMST26°	Field Measurements	Sample Time:
Parameter Time	SWMST26°	Field Measurements	Sample Time:
Parameter Time Water Temperature (°C) Specific Conductivity	SWMST26°	Field Measurements	Sample Time:
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS	SWMST26°	Field Measurements	Sample Time:
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm)	SWMST26°	Field Measurements	Sample Time:
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen	SWMST26°	Field Measurements	Sample Time:
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen	SWMST26°	Field Measurements	Sample Time:
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L)	SWMST26°	Field Measurements	Sample Time:
Parameter Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L) pH ORP	SWMST26°	Field Measurements	Sample Time:

5/1	>/16	Tim	e <u> 15</u> 3	50	Statio	n Number	MS
oleted by	To	BI		Checke	d by:		
	•	FI	ow by Car	oture Meth	<u>od</u>		
Measu	ement Number		Time	(sec)		Volume	e (L)
\setminus							
			Flow b	<u>v Meter</u>			
R.E	w	<u>ft</u> L.E.	.w	<u>ft</u> Tot	tal Width		ft
		Number o	of Subsection	s Based on St	ream Width		
То	tal Width (ft)			Subsections - 10		Subsection 0.2 -	
	2 - 4		1() - 12		0.3 -	0.4
	4 - 10			! - 15 5 - 20		0.4 - 0.7 -	
	>20			- 25		1.0 -	
Distance from Referenc	0.2	Velocity Mea 0.6 0.8 (c Subsection Depth (ft)	circle)	Distance from Reference (or N/A)	Depth of Subsection No. (or N/A)		surement 0.8 (circle) Velocity (30 sec
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-			7				
(5						
	6	}	1				
	8						<u>.</u> .
	10						
	11						
<u> </u>	12						
	4.5				ł	•	
	13 14						\\<

Project P4 Production SE Idaho Mine-Specific Se Program - Spring 2016 SW Sampling Date 5 1 13 1 16 Arrival Time 12 15 Field Personnel Signatures T. OSDOTN B. Jones SITE DESCRIPTION Station Name West fork of Rasmussen Crack Station Number MST 274 file" Longitude W " DN ' File Latitude N Photo Number Datum NAD 27 Elevation 🚕 Site & Stream Description Small creek Citin Surface Water Characteristics (color, odor, appearance): _________ SAMPLE COLLECTION Collection Method: 1L bottle, Horizontal-bottle Swing-sampler, Other(Sample Time: 12 (ろる Sample ID: 1605 SWMST274 **Field Measurements** Sample 3 Sample 2 Sample 1 **Parameter** Time Water Temperature **Specific Conductivity** (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen (% sat.) **Dissolved Oxygen** (mg/L) pН ORP (mV) Turbidity 48 NTU (FTU) NTV

Air Temperature

					ecific Se Pr		pring .	2016 3	SVV Sampili	19 	7 F.
e <u>05 /</u>	15	116	7	ſime	e <u>/2:3</u>	<u>> </u>	;	Static	n Numbe	r_MST	
npleted b	oy: _	BJ.	10		·	Checke	d by:				
				Flo	ow by Cap	ture Meth	<u>iod</u>		,		
											\neg
Mea	suren	ent Number			Time	(sec)		-	Volum	e (L)	_
						THE RESERVE THE PROPERTY OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN THE PERSON					
			- Marian Marian								
					,						
					Flow by	y Meter			•		
P	FW	85	ft	ıF	w. <u>13.8</u>		tal Wi	dth	16.5	ft	
					of Subsections					,	-1
	Total	Width (ft)				Subsections			Subsection	Width (ft)	
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		2 - 4 I - 10		••••		- 12 - 15			0.3 -		
		0 - 20				- 20 - 25			0.7 - 1.0 -		-
		>20	Donth	of Ma	locity Measure		low Su	rface)	1.0 -	2.0	
To	tal De	pth (TD): <2.6			andard setting				X2) and 0.8TI	D = (TD/2)	
		Depth of	Velocity	Mea	surement	Distance			Velocity Mea	surement	
Distar fror		0.2			ircle)	from Reference				0.8 (circle)	
Refere	ence	Subsection No.	Subsec Depth		Velocity (30 sec)	(or N/A)	1	ection or N/A)	Subsection Depth (ft)	Velocity (30 sec)	
8, 5	~	1	0,2		No Plan	14 12	\$ 10	<u> </u>	0.1	0.15	
	3	2	00 1		No Flor	12.3	1'	7	,	vo Fla	
9.1		3	De (C)		No flor	13.6	1 :	g g		Vo flor	-
9.4		A	or 2		0.03	13.8		A)	0 P.C		
9.			or 2		0.20	1,21,5					
10.0		•	.2		0.15						
10.			2,2		0.10						
10.6			3		0.21						
10,9		9	0.4		0.40						
11, 2		10	0,7	-	1.11						
11. 5		11	0.5		0.49	every service					
12.		12	0.4		0.26	Accordance of the Control of the Con					
12.		13	0.3		0.21						
13,0		14	0.2		0,19	ne e e e e e e e e e e e e e e e e e e					
13.	7	15	0,2		0.31						

Project P4 Production SE Idano Mine-Specific Se Program - Spring 20 to 3W Sampling
Date 5 /12 / 16 Arrival Time 5.50
Field Personnel
T. Esber Signatures Control
3. James Signatures
CITE DESCRIPTION
Station Name Station Number MST275
Latitude N 4746/93-29 M" Longitude 455625.39 M"
Elevation 2.059.68 # Datum NAD 27 Photo Number
Site & Stream Description Show & Stream Flowing out of
port with loss of organic build up
Surface Water Characteristics (color, odor, appearance): odorcss, gree
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(
Sample ID: 1605 SWMST 275-U, F Sample Time: 15:55

	Fi	eld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	15:55		
Water Temperature (°C)	21.6°C		
Specific Conductivity (µS/cm) @ 25° C	109.9		
Conductivity (μS/cm)	102.4		
TDS (g/L)	70		
Dissolved Oxygen (% sat.)	7-8.0		
Dissolved Oxygen (mg/L)	6.47		
рН	7.55		
ORP (mV)	43.6		
Turbidity (FTU)	45.5		
Air Temperature (°C)	61'6		

te _	5/12	. 1 16	Tin	ne 1612	<u>5</u>	<u> </u>	Statio	n Numbe	r_MSTE				
		·		low by Car									
	Measurer	nent Number		Time	(sec)			Volume	∍ (L)				
	. /	1		3,0			.	د د					
	Z			3.2				<u> </u>					
	3	>	<u> </u>	3.2				1.5	···				
				Flow b	y Meter			· Ø					
	R.E.W	ſ. <u></u>		E.W		tal Wid			ft				
/		1186246 /60	Number	of Subsections		tream V	Vidth	Subsociien	Midth (#1)				
	Total	Width (ft) <2			Subsections - 10			Subsection 0.2 -					
		2 - 4 4 - 10			- 12 : - 15			0.3 - 0.4 -					
		10 - 20		15	- 20			0.7 -	1.0				
		>20		20 elocity Measur	- 25		1.0 - 2.0						
	Distance		Velocity Me 0.6 0.8	(circle)	Distance from Reference	De	epth of	Velocity Meas 0.2 0.6	surement <u>0.8</u> (circle)				
	Reference	Subsection No.	Subsectiัญ Depth (ft)		(or N/A)	Subse No. (o	ection or N/A)	Subsection Depth (ft)	Velocity (30 sec)				
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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

	ction B	-14-1-							ion C					٠,		= 4				nink	Page:	-1	h multi	of 2	2	
	port To:	oject in	nformation:	-	/		10-11	Atten		rmation		-	ha		-		7			11/1			202	362	0	
Address: 2890 E Cottonwood PKW & \$2300 Col	ру То:			/				Com	oany N	lame:	+ 0	-					REGULATORY AGENCY									
Salt Lake (ity, UT 84/21		-	/			*1	1:	Address:								NPDES GROUND WATER DRINKING WATER										
	rchase Or	der No	/	16	Pace Quote Reference:								Tr													
	ject Nam	e: Louise	into So	ma 2016				Pace Mana	Project ger:		1	An	1.31				Site	e Loca	tion				\$			
	ject Num	oer:	14	O.		all alter		Pace	Profile	# 3	6	44	1			1,774	, m	STA	TE:	I	D		11000			
			7/8						-			5			Req	ueste	Anal	ysis F	iltere	d (Y/N	1)		1000			
Section D Matrix Code Required Client Information MATRIX / COD	es DE	codes to left)	()	COLL	ECTED			lin.		Pres	ervat	tives		N /A			/13	ji ko	all i		1	M	-0.15	ne s		
Water Waste Water Product Soil/Soild	DW WT WW P SL OL	(see valid codes to left)	co	MPOSITE TART	COMPO END/G		COLLECTION	S	100 P				1	-	Se FILENCE	22.400	ų,				A STATE OF THE STA	(V/N)		-3		
SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE ** ** ** ** ** ** ** ** **	WP AR TS	MATRIX CODE (TIME	DATE	TIME	SAMPLE TEMP AT	# OF CONTAINERS	Unpreserved	H₂SO₄ HNO₃	NaOH	Na ₂ S ₂ O ₃	Methanol	Analysis Test	EPA (6020A)	SSON	N		4		richer Inspil	Residual Chlorine (Y/N)	Pace	Project N	lo./ Lab I.D.	
1 1605GWMMW018-U	U	IT 6	5/4/	14 1125				2	1	1					X	X					/					
2 16056WMMW018-F	la	7 6	5/11/1	6 1125	g Ser ji		1	1		1	1			1	X			11		11/	1	U c c				
3 1605GWmmw018-U, ms	4	7 4	5/1/16	1135				2	1	1	1				X	X				1					545	
4 16056 WMMW018-F, MSK	215 /	T 4	5/11/1	6 1125		jalm	10	1		1	1				X		1.1			/						
5 16056 WMMW 018 - U, MS	h	11 6	5/11/1	6 1135				2	11	1		1			X	X			1					. 0		
6 11005GWMMWD18-F, MS.	D 4	7 6	5/11/1	6 1135					4	1	1				\searrow				10				9			
7 1605GWMMW029-U	la.	TG	5/1/1	1250				2	1	1	114				X	X		/								
* 16056Wmmw0729-F	λ	TG	5/1/	6 1250				1		1	VI	1	1		X			1				Н				
9 16056Wmww033-U	L)	11 6	2 2/11/1	6 1450			+	2	1	1	-	H	+		Ă,		1	-		+	-	1 10				
10 1605 GW MMW 033- F	-	11 G	2/11/	6 1500				7	1	-	+	H	1	1			/		-		-					
11 16056W MBW 03Z-1-U	- 1	7 6	0111	11500				7	1	1	+	H	-		X	1	4	+	\vdash	-	-	+				
ADDITIONAL COMMENTS	J/v	RELING	QUISHED E	BY / AFFILIAT	ION	DAT	E	T	IME			ACC	EPTE	D BY /	AFFILI	ATION		DAT	E	TIME			SAMF	LE CONDIT	IONS	
411.	Tom D	sber	~ /MW	4		5/12/1	6	80	0	F	ed	E	4	11		1					11		U-Lbe	d_		
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Section A Required Client Information:	Section Required		ot Info	rmation					Section														Page:	2		of 2	-	
Company:	Report To		JE II II OI	mation.				-	Invoice Attention		ation:		tu		-	7	-							- 1	202	361	9	
Address: 2 x90 E (ottonwood Pkwy \$1.300	Copy To:				/				Compa	ny Nan	ne:							R	EGU	LATO	RYA	GEN	ICY		B 45			
Salt Lake City, UT 84121		l. A	wi I	/	the	ed at a			Addres	_	TCOV.		10	1				T	- N	PDES	T	GR	OUNI	D WAT	ER [DRINKIN	G WATE	R
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Phone: 61-3232 Fax: 801-617-4200	Project Na	me:	You	lo Spin	2011	0			Pace Pr Manage	oject	/	-	IN	-				1	Site L	ocatio	n _				2	-		
Requested Due Date/TAT:	Project Nu	ımber:	7111	1	0	117	=(III		Pace Pr		B	(h)	44	1		911	717			STATE	-	+:	2					
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Section D Matrix C Required Client Information MATRIX /	CODE	to left)	C=COMP)		COLLI	ECTED					Prese	rvati	/es	54	N/A	11		i A	ı (i)	rig	/YIII		A		in Ty	Min-		
Drinking Water Waste Waste Waste Water Product Soil/Solid	WT	(see valid codes to left)	(G=GRAB C=C	COMPO		COMPC END/G	OSITE RAB	COLLECTION	S		fil.	i d		bi	1	Se Filter	300.0 SNA 25406		1				13/4	(Y/N)				
SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE Sample IDs MUST BE UNIQUE Other	WP AR TS OT	MATRIX CODE	SAMPLE TYPE (G	ar land				SAMPLE TEMP AT	# OF CONTAINERS	Unpreserved H ₂ SO ₄	INO ₃	JaOH	Va ₂ S ₂ O ₃	Other	Analysis Test	PAL LODZON	TAN TOS							Residual Chlorine (Y/N)	l point			
1 1605 6W MBW032-7-	1)	TU	1/2	DATE	1515	DATE	TIME	0)	2		1 /	2	2 2	: 0	-		A)P		+				-	14	Pace	Project N	o./ Lab	I.D.
2 1605 GW MBWD32-2-	F	WT	6	5/11/16	1515	07 16	/	11	10		1					X		1			100	10		Н		10		
3 16056WMMW017-F		WI	6	5/11/16	1155				1		1		-		ľ	X			1					Ħ				
41605 6W MMWOIT - U	/	WT	6	5/11/16	1755	/	-000		2		1					X	X		1						WI SU	27 .8		S. P.
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3 1605 SWM ST 045 - 2 - U	1	-						2	1	· /					~		1							plan.			11
4 1605SWM5T045-2 F	1	+	1	12:05	1.00			1		V						V			1			(1) (1) (4) (1)					-
5 16.055 WMSTO44-U	-	1		1				4	~	V	-	-	-	-	V	1	V		1			- 0					_ [
7 16055WMDS 034-U		1		13:00				1	-	V	1			-	V	Č.	V			1							
8 16055WMDS034-1=	-	1	++	13.00				7	H	V		1		-		V	V	\vdash	+	-		-	-				
9 6055WM57136 - W		1		14:05				2	V	V	H				V		. V		H	-	V	7		4.	_	-	
10 16055WMST136 - F	1	11	-	14:03				1		V	H	+	-	-		V	1				1	7				-	
11 1605-SW MST 275 -U		11		15:55				2	V	V	\Box				V		Y				+	1	1	7			
12 16055W MST 275 - F		1	1	15,55				ı		V						V	1		11			-	1				
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3 16056WMMW023-1		WT		5/12/16	1075				2	1		1			1		X	X					X						
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6 1605GW MMW028-1-F		w7		5/12/16	1255				1			1		1							W/								
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Required Client Information: Company:	Report To:		ct Infor	mation:		/	5/16	_	Invoic Attent		rmation		-		16	1 6			1					202	3487	7
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Phone: 617-3232 Fax:201-617-1240	Project Na	me:	Mo	NSQN	to So	ring 2	2016		Pace F Manag	roject		/				77			Site	Location	1	-	1	1250		
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Other	ОТ	MATRIX C	SAMPLE	DATE	TIME	DATE	TIME	SAMPLE TEMP	# OF CON	Unpreserved	H ₂ SO ₄ HNO ₃	HCI	Nach Na ₂ S ₂ O ₃	Methanol	Analysis	SE/E	51.50	500			2		Residual	Pace	e Project N	o./ Lab I.D.
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Section A Required Client Information:	Section B		et Infor	mation:		1			Sect		C formation	on:				3							Pag	Tierra	3	of E	3
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Pace Analytical www.pacelabs.com

	Section B			Section C																		Page:	of	0
Required Client Information: Company: Monsanto Co.	Required Project Information: Report To: Molly Prick	kett		Invoice Info Attention:		its Payable	samp.	2						7		-		Г	ECLI	II A T.C	NDV (GENC'	,	
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rachel.a.roskelley@monsanto.com Phone: 208-547-1248	Project Name:	_	to	Pace Proje	ct Manager	:	Lori Ca	natilla		_	-			+			= FION							1
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Standard	Valid Matrix Codes	7				26709	3	10			-				Requ			1	1	//	/	///	-	
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2 16056WMBW150-F		-	+	+	1030				2	1	-		++	+	H	+	~	/)			H			4
3 10096/WWBW021-4	-	+	+		1000				1	A	V		+	+		+		X			H			
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(A-Z, 0-9 /,-) Air Sample IDs MUST BE UNIQUE Tissue Other	AR TS OT	MATRIX CODE	AMPLE	DATE	TIME	DATE	TIME	SAMPLE TEMP	# OF CONTAINERS	Unpreserved	H₂SO₄ HNO₃	HCI	Na ₂ S ₂ O ₃	Methanol	lysis	A0200	05, 20T	highli hi	The second of th		Residual Chlo	Pac		No./ Lab I.D.
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3 1602 PM MD522- D		W	3/	19/16	1225	allo ha	/		2	1	1				1	X,	\sim							
4 1605 GUMBU 099 -	P	WI	5/	11/16	1311	Nen sii	/	0	No.		1			E V										
5 16056WMBW099-	-	1.37	2/	4116	130		/	12	9%	11	1	+		+	1	1	_							
7 10056WMMW024-F)	WI	2	1.11	1417	H 50/0	/	T Air	2	1	+		ACH 7	+				5751	1413	THE GOLD	07/10/	Tress		
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Section A Required Client Information:	Section B		t Information:						tion C										Pag	je: 6	Lee	of 8	
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Phone: Pax:	Project Nar	Mu	ovsan.	to Sp	ring	Zal	e	Pace Mana	Project ger:		16	A	11			- /	Site L	ocation	71	1			
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	Section I									ion C										Pag	ge:	7	of 8	
Company:	Required Report To:	_	ct Infor	rmation:		-			Atten		rmatio	n:	-		Th.			7		1 ((i))		202	361	5
Address: 2890 E. Cottonwood Many	Сору То:								Com	pany N	Name:	M	an	sen	ta			REC	SULATOR	Y AGENC				
Sult Lake City LAT 84121						* - *			Addre	ess:		1.	-07-	Louis I	00			Г	NPDES		JND WA	TER [DRINKIN	G WATER
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Drinking Water Water Waste Water Product Soil/Solid	WT WW P SL	(see valid codes to left)	(G=GRAB C=C	COMP STA	OSITE RT	COMPO END/GI		COLLECTION	S				1		→	Ww.	No. British		L John		(N/N)	o milio		
SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE Tissue Other	OL WP AR TS OT	MATRIX CODE (SAMPLE TYPE (G	0.9-7	42114	ie alie		SAMPLE TEMP AT C	OF CONTAINERS	Unpreserved	H ₂ SO ₄	_ 3	Na ₂ S ₂ O ₃	Methanol	Analysis Test	DZAA) SA	DS, 504		made 1 July 1 July		Residual Chlorine (Y/N)	2 (1=1) (0-1)		
E		M	SA	DATE	TIME	DATE	TIME	SA	# OF	5	Į, Į		Na Na	Me d	4	09/	9	45	(d dig di	tia Jun	8	Pac	e Project N	o./ Lab I.D.
1 1605 GWMWW009- F		WI		5/13/14	1110		(/	1		1						X.							
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3 1 1005 GW MMW 021-F	CT CO	WI		2/13/16	1226	ativ had	/		0	1	1	H						1					EY	
4 1005 GWMMW027- U		44.1		5/13/14	1235	Lines of	1		4	H	1	H				4		+++			SEL A			
5 1605 GWMMW 035-P		WT		51.316	1315		/	-	0	1	-	H	+			V		++		7 : -			_	
7 16056W MMW 035 - U	O RE	WT	100	21.11	1512	100	/		6	H	1			THE AV		\wedge	n		1 -1 -1	Tarl Sales	Ge To	Biggs		
8 16056Wmmw037-1-U		W		2/12/11/2	1500	17)		-8	2	1	1	120	1	-	-	/			2 13 1				olli -	
9 1100564 MMJ037-2-F		L.T		51.2/11	1410	- /		H	1	1	1		H		1	$^{\wedge}$	\sim	+						
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ADDITIONAL COMMENTS		REL	LINQU	IISHED BY	/ AFFILIATION	ON	DATE	1	T	IME	Ť		AC	CEPTE	D BY	AFF	ILIATION		DATE	TIME		SAM	PLE CONDITI	ONS
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					-		RE of SAMP	1			1						TE Signed		110/1	/-	Temp in °C	Received on Ice (Y/N)	Custody Sealed Coole (Y/N)	Samples Intact (Y/N)
*Important Note: By signing this form you are accepting	ng Pace's N	ET 30	day pa	yment terms	and agreeing t	o late charge	s of 1.5% per	mont	h for an	y invoid	ces not	paid wi	ithin 30	days.		(141)	/11/	1	1//	-	F-ALL	-Q-020rev	.07, 15-May-	



Section A	Section B			Section C																			~	
Required Client Information: Company: Monsanto Co.	Required Project Information:	-		Invoice Info	rmation:				4"											3		Page: 2	8 of	8
H H	Report To: Molly Prick	ett)		Attention:	Accou	ınts Payabi	le								1			R	REGL	LATO	RY A	AGENC	Y	
Address: 1853 Highway 34	Сору То:			Company:				Мс	nsanto	Co.					1	□ NPDE	s ſ							MATER
Soda Springs, ID 83276				Address:												□ UST						ОТН		
Email To:rachel.a.roskelley@monsanto.com	Purchase Order No.: 4511	48538	7	Pace Quote	Reference	O .						_		_	1	SITE	_	_		A C		IN E		
Phone: 208-547-1248	Project Name:			Pace Projec	t Manage	er:	Lori Ca	astille							1	LOCAT								HER_MN
Requested Due Date/TAT: 7 business days	Project Number: Profile	5		Pace Profile	#:	-26709	- 3	36	44	12	2				-	Filtered (Y/	**************************************	1	7	17	//	77	7/	/ IEK_IVIN
	Valid Matrix Codes MATRIX CODE DRINKING WATER DW		₩.		COLL	ECTED		E	S			Prese	rvativ	es		Requested	,	//	4	//	/	1/1	-	
SAMPLE ID One Character per box.	WATER WT WASTE WATER WW PRODUCT P	MATRIX CODE	SAMPLE TYPE =GRAB C=COMP					SAMPLE TEMP AT COLLECTION	CONTAINERS			T				Ana	1	//		//	//			
± (A-Z, 0-9 / ,-)	SOIL/SOLID SL OIL OL WIPE WP	TRIX	MPLE					LE TE	ONT	pe						/	1	15	//	//	//	//		
Sample IDs MUST BE UNIQUE	WIPE WP AIR AR OTHER OT TISSUE TS	MA	S-GR	COMPOSITE STA		COMPOSIT	E END/GRAB	SAMP	# OF G	Inpreserved	70	_m	ı	203 anol		15	Contract of	te lass	1/	///	//			
				DATE	TIME	DATE	TIME	0,	*	Unp	H ₂ SO ₄	N N	NaOH	Na ₂ S ₂ O ₃ Methanol	Other	1 8	100/	1000	3/	//	/		Pace	Project No. Lab I.D.
1 16056WMMW032-1		WT		5/15/16	0915				1			1				X								
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3 16056-WMMW020-		WT		5/15/16	1120				1			1				X								
4 16056WMMW020-		WT		5/15/16	1120				2	1		1				X	X						31	
5 16056WMW/SA-F		WI		5/15/16	1240	2			- 1			1				X								
6 16056WMW15A-L	/	MI		5/15/16	1240				2	4	2	(X	X							
7 160 5 G WAM W 030 - F		WT		5/15/16	1340			*	1			1				X								
8 16056WMMW030 - 6		MT	4	5/15/16	1340		1		2	1		1				X	X			H	Ħ			
9 1605 CHUMBWOOG - F		WT		5/15/16	1430												Ť		\Box	11				
10 16056WMBW006-L)	NT	i	\$15/16	1430															++				
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Additional Comments:	RELINQUIS	SHED	ВҮ	/ AFFILIA	TION	DATE	TIM	Ε	ACCE	PTE) BY	//AF	FILL	ACION	ı İ	DATE		TIN	ME	CAL	MDLI	E CONI	OLTION	10
Total Metals to include: Al, Fe, Mn	My	an W	10	100		5/14/10	- Licentine	00		-	1	-		11101			4				VIPLI	E CONE		
Diss Metals to include: Al, Fe, Mn		-	94			710110	17	CAN.	-	* 6	51	E>			-	5/10/14	+	/	400	2	+	Z Z	N. Z	N/A
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	ection A quired Client Information:	Section Required		ct Info	rmation:		+ 1	1	*	Sec			-				,-							Page	: _	1	of 2	
	mpany: MWH al-k-l	Report To	- 25	OC IIIIO	madon.	- /	-			Atter		formati	on:			70				1	-					202	348	1
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Em	nail Tolly, years & Muffigher	Purchase	Order	No.:				-		Pace Refer	Quote					1	<			r	UST	T	RC	RA		F	OTHER	
Db.	one: 014344-6276 Fax: 617 4200	Project Na	ame:	Moi	NSZA	5	act . I	2.	10		Projec	ot	/	_		T				Site	Location	on				¥ 10 = -	-	
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	Drinking Wat Water Waste Wate Product Soll/Solld SAMPLE ID	WT WW P SL	(see valid codes to left)	(G=GRAB C=COMP)	COMP STA		COMPC END/G		COLLECTION	SS.	3					-	6020A	1 LEPAID	- Jane)				pu	-	(V/N)	to	3.0	
ITEM #	(A-Z, 0-9 /,-) Air Sample IDs MUST BE UNIQUE Tissue Other	OL WP AR TS OT	MATRIX CODE	SAMPLE TYPE (G	DATE	TIME	DATE	TIME	SAMPLE TEMP AT	# OF CONTAINERS	Unpreserved	H ₂ SO ₄	HCI	NaOH Na.S.O.	Methanol	L Analysis Test		12 Se Carl	504 (E%						Residual Chlorine (Y/N)	Pac	e Project N	lo./ Lab I.D.
1	16055WMS6006-C)	FU	6	5/11/10	10.05	1			2	V	¥	1				V		V	1								
2	16035WMS6006-F		1	- 1	1	1	4/100	1		L	1	V	1	130			-	V	1	1		11	6/2/1	h				
3	1605 5WM 5 G 007 20)				16.25	-\	Time	1	2	1	V		101			1		V									-13
4	16055WM5G007-	F		1	A DYSU	1	sig V:	IFE CV	16	1	1	V		1	m()			1	1	Univ	1	11/	10		10	+	4.11	4
5	16059WMST64540U	No. 11			171/19	11/25	1	*	130	2	V	- 10	1		11/2	-	V	100	100			1	1		41 8	1/1/	6	9, 7
6	16058WMST0451-F1		1	1		1	, -/			11		W	1	1				4	V			1					- 1	S
7	16055WMST069-U	r				12:15		V.	6	2	V	3	1	- 1			V		- 0			1				HE		
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9	16055WMST020-U					13:35				2	V	V			1	7	V		/				1) P		
10	1605SWMST020-F		1			1		1	6	1		V	1		1./1			V	1					1				Pr
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The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

		Section B Required F		et Infor	mation:						ion C	rmatio	n::												P	age:	-	2	of 2	_	
Cor	mpany: MWH Jobal F	Report To:				/				Atten	20040000	2.47.2.00	-			-	6						- 4					202	348	2	
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Em	ail To:	Purchase C								Pace (/		4	10				r	UST	9 4	1	RCF	RA		Γ.	OTHER		-
Pho	one: 617-3232 Fax: 617 4200 F	Project Nar	me:	Now	dente	Sant	y 21	216			roject	1	/								Site	Loca	ation								
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	Water Waste Water	WW	valid codes to left)	B	COMP		COMPO END/G		COLLECTION					1				23	0	10				92			9				40 00
14	Product Soil/Solid	P SL	(see va	(G=GRAB	312	uni.	END/O	- 10	COLLE	S		10		1	ė		→	120	8	100			1		d		Chlorine (Y/N)	7		- 21	-
1 .	SAMPLE ID Oil Wipe (A-Z, 0-9 / ,-) Air	OL WP AR	3.4	1					₽A	NER					1 /		Test	18 3	3 16	3			1				orine				
	(A-Z, 0-9 / ,-) Air Sample IDs MUST BE UNIQUE Tissue Other	TS	MATRIX CODE	TYPE			ė I	7 1	TEMP	ITAI	ved	- 1						Z s	The state of	3		-	1		1		S				- 1
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ITEM #			MAT	SAMPLE	DATE	TIME	DATE	TIME -	SAMPLE	# OF CONTAINERS	Unpreserved	HNO3	고 도	Nac	Methanol	Other	Analysis	25	SP	F			a - 4				Residual	Pace	Project I	No./ La	b i.D.
1	1/462	1.	WT	6	5/1/16	1530				2	V	1	1				4	1		V	1	-			Ť						
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-	- SOLAT A		3		1		_						-		Re	ques	ted A	40	is Filte		(Y/N)			_		
	Section D Matrix Codes Required Client Information MATRIX / COD	to left)	C=COMP)	COL	LECTED			1		Prese	ervati	ives		↑N/A					-					4			
	Water Waste Water Product Soil/Solid Oil	NO TO A A A A A A A A A A A A A A A A A A	(G=GRAB C=C	COMPOSITE START	COMPO END/G	GRAB UII		8				7		st 🌡	ZOA)	3000	540 C						ie (Y/N)				e
ITEM #	(A-Z, 0-9 / ,-) wipe (A-Z, 0-9 / ,-) Air Sample IDs MUST BE UNIQUE Tissue Other	MATRIX CODE	AMPLE TYPE	DATE TIME	DATE	SAMPLE TEMP AT		# OF CONTAINERS	H ₂ SO ₄	HNOs	NaOH	Na ₂ S ₂ O ₃	Other	Analysis Test	Se(EPA 60.	50° (EP	TDS SMZ			*			Residual Chlorine (Y/N)	Pace	Project	No / La	ah I.D
1		WT		19/16 1505			12		-	VI					1		w							1 400	riojeot	10.7 E	io iio.
2		WT		1505	5 /4 //	12/19	-	1		V	1					VV	1	1	3/13	16						A	
3				175	>	/	3	2. U	1	V	1	-			/		V					H					
4	16055WMSTOSO-F		3	1750	1		1			1					19 14	11	14	Tr. o									
5	16055WM05030-1-U		5/	10/16/0930	/		15	2 V	1	Y				1	1		V		1								
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		- 21		42	SIGNATUI	RE of SAMPLER	2:	-		20-1		1			DAT	E Sign	ned Y):	05/	11/1	6			Temp	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	-	Samples Intact (Y/N)



The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

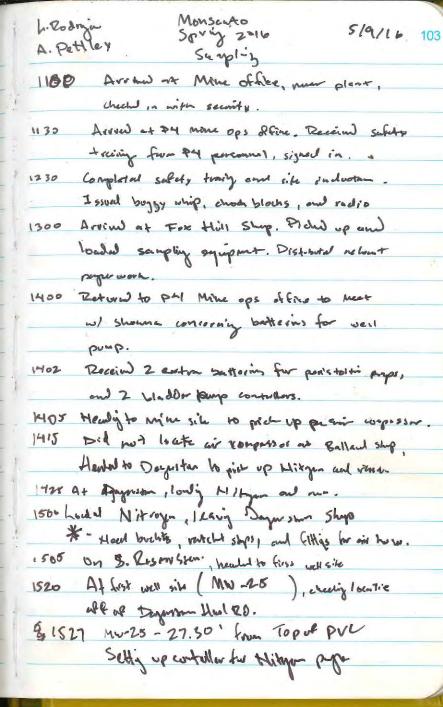
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	Section D Matrix Co Required Client Information MATRIX /		o left)	(AMC)		COLLE	ECTED					Pr	esen	vative.	s		N/A		i .									
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ITEM #	(A-Z, 0-9 /, -) Air Sample IDs MUST BE UNIQUE Tissue Other	WP AR TS OT	ш	SAMPLE TYPE (0	DATE	TIME	DATE	TIME	SAMPLE TEMP AT	# OF CONTAINERS	Unpreserved	H ₂ SO₄	HCI	NaOH Na ₂ S ₂ O ₃	Methanol		Analysis Test	24 SE CLAM	Toy (FIR					Recidual Chlorine (V/N)	Pag	ce Project	No./ La	h l.D.
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Section A	Section I									tion (Page:		4	of 4	/ '
Required Client Information: Company:	Required Report To:		ct Infor	mation:					-	ce Inf	ormati	on:			-	_	-		1					9	202	362	1 :
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(A-Z, 0-9 /,-) Air Sample IDs MUST BE UNIQUE Other	OL WP AR TS OT	MATRIX CODE	SAMPLE TYPE (G	DATE	TIME	DATE	TIME	SAMPLE TEMP AT	# OF CONTAINERS	Jnpreserved	H ₂ SO ₄	- C	NaOH Na ₂ S ₂ O ₃	Methanol	Other Analysis Test	FA I LO MA	EPA (LOZOA)	100, 300, 30						Residual Chlorine (Y/N)	Pace	Project N	No./ Lab I.D.
1 1605mmw026-U		1.17	16	5/10/10	1127	DATE	TIVE	2	2	-		-		-		· \		<	+	+		+	+		Pace	Frojecti	10.7 Lab I.D.
2 1605 MMW 026 - F	-	1.37	6	Stalle	1127		-	64	1	1	- 1		+	+	-	1	V	1	+	+		+	1	4			
3 1605GWMMWZI-U		417	6	Stolin	1342			+	2	134	- 1	+	-		-	5		/		+			/				*
4 1605GW MMWDZI-F		WIT	14	Shaller	1342		per .		1	+	-					-	V	1				/					
5 1605 GW TO 180 - U	10	Wi	16	5/10/16	1550	_	-		2	1	1			\Box	1	5		(Ħ	/						
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						SIGNATUR	E of SAME	LER		>	+ AR	2	3	_	- Lilia	0	DATE Sig	gned YY):	0/5	BUIL	do			Temp in	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)



on unter quality pokunters.

1619 .7L/min purporate

1624 33.64 (no hop of city (REF), took punntus

1030 Water level at 36.31 from REF stook pornmeter

law Water Lat at 39.0' REF, took pounters

1647 Water land at 40.3' REF, packing up,

leavy to west sits.

1703 At MBW99, scatting up peristrition pump

Mrs waterless at .95' nelas TOL

1713 Westerland at . 4.98' below TOC (17.29 por open)

Page = .35 /min lap: 6.910C

PH: 7.17

ORP: 144.7 M

DO: 4.65 M9/L

sc: 331 NS/cm

Tuesty: O HTU

1718 8.13' kelow TOL, took perantos

1723 Pumping well dry will notwork souper

when well has rechyed. 11.13' Tol

1733 Pompal dry, will refun when sufficiently receiged.

Loft well site.

1744 Left Daywern Shop Area.

15/10 Signed out of mine of fice

5/10/16 A. Petiles 0630 MWH calibrating water aunity

Motor YSI 6970 5/1 70063.

- PH 7 reading = 7.00 @ 16.95 c No Cal Mine

0856 Neter 45I 6920 5/n 70067

PHIO WENDY = 10.12@ 17.30°C, Heads Cal

0700 Calibrated Soule to 10.00 pH

Realy 10.00 pt @ 17.25°C

0707 Calbuty Soule to 1409 rus/cm

Realing 1439 Me /can @ 16.8°C

California to 1409 No can @ 16.87°C

Using 2018ell Solution, calibratal to 236.2

@ 16.380L

0728 County For Tunidity with 126 NEW

Reedy 179 MTU, Should he 126 NTU

0734 Calibrating for turnelly to-401100 Carly 69 HTU for 40 MTU Soll-

Califord to 40 NTU

0740 calisaly for ONTO Totalis

Realy 15.1 HTU, called to ONTU

Racijo Didnot stabilize to 40 NTU only 40 NTU

calibration solution

0743 Calibely to 100 NTU Ready 35 NTU, calibily Soule

to 2 points, O MTO and 100 NTV

orne Attempted to calibde 2 pours, 40 pero overnged.

H

0746 Calabity to ONTU W/O NITU Solin. OHTU is cal sol'n'is realize OHTU

0750 lating cotting baroutine pussur

0842 Signiz in A theme office. Filled out JSA.

2903 Received new vir corperson at mine offin, leavy Mine offine for shop to pick up generar.

0915 At Daywrton Ship , body for genitor for an longasse.

0955 At Rasanssen that and puty up general. MMW-025

At MMW-026, mitigen well, no lock on Monumer.

1213 Water land at 284.68 below TOC.

Setting pump and water pants quant

1022 Stantij purp and well prije

Took parantes, paged ~ 3.5 L new 21.7 L for

lo42 Flow mhe 650 And/mn, .65 L/min

Water lea @ 284.7' inter TOL

1109 Flow ruly 650 mm/min, . 651/min H20@ 284.7' helow TOC

1127 H20@ 284. 7 Sdow Tox paping. 65 Year, 35.25]

T= 9.18° L, pH=7.46, ORP.48.6 MV

DO: 0.05, SC: 427 NS/ON, Turb. . 0.9 MTU

God sample 1605 MMW 024-U, F. @1127 I unfeted, I fitten without, I writer of HHOS

1140 Downledy transdown dater, clearly up well site gupont

1155 heavy MAW-026, no lock on monument Download fransitual data.

Spring 2016

1212 At Ballar, puller up to MMWOZI.

A. Petttag

L. Rodrym

1220 KES DTW 209.92' below TOC

No lock on moment, cosing cap too hyuro

1225 Stantal pump to byin puzing , angette contaller bottery Jew, needed to chige

1242 DTW 210.05' B TOC , 25 4min prejent 1=8.24°C, pH=7.27, 027:127m

00:0 7/2 SC:622 No From hund:0

1252 Took jourtes and water levels.

1302 DTW 210.11 below TOL

1315 Junelly the Saple bottles ID: 1605 GWMMW021-U,F

1382 Payed hola volume, taky paintes enry

1342 Took Samples

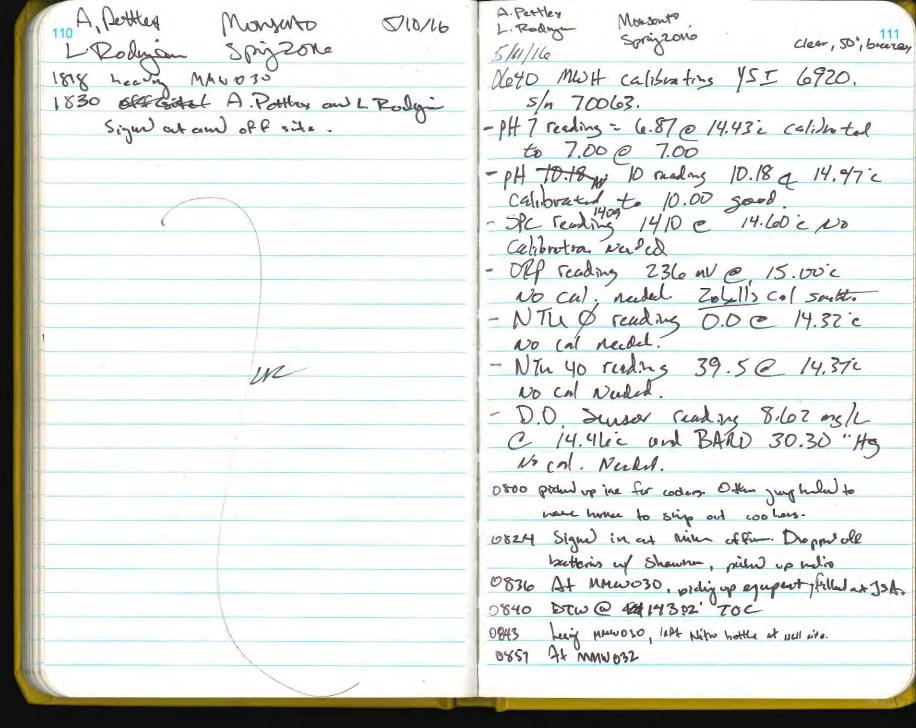
DTW 210.12' whom TOC, 3 / min punge, 201 lotal Temp: 9.52°C, pH=1.19, ORP=133.3 MV

DO: 6.16 M/L, SC: 625 NS/cm, Text: ONTU

1357 Downhald translucer data, cleaned up well site, leaving to must site

A. Retther Mousinso 5/10/16 108 L. Rodyan Spry 2016 Af MMWOOG. DTW 265. 30 below toc Setting up pourp, One M fanhis emptly will were new tennes for former Started pumping 1417 DTW 265.58' TOC 423 T: 8:73°C, PH:7.59, ORP= 127,1 MV DO: 0 SC: 507 NS/en TURO = 0 Meed touse freeze at live for pump, 1426 parentes my he dearn. 1430 Purperate .35 /min DTW 265. \$61' TOC. Using fracte out the may case Do levels to fluctuate. Sargle To will be: 1605 CIWMMWOOG-U,F 1530 DTW 265.61' TOC, N.35 /mn puge, 25.0L Texp: 9.24°C, pH: 7.53, ORP: 125.4 MV DO: 5.02 7/2 St: 523 1/cm . Turb: D NEW - Bubbles formed annual sensors for Took and DO, cousing higher then actual nearings. Firm! parentes were taken after bubbles even senses were shaken off. - Took samples. @1530 Downloaded transducer 1544 Health muxt well. 1653 At MMW-16A

A. Rettler (housest o 5/10/16/109 L. Rodyon Spring 2016 DTW 4.39' TOC DTW 6.41' TOC, purpo rute @ .25 /min 1701 DTW 6.88° TOC, 0.3 /min popul 14.5L Tup: 6.73°C, pH: 7.33, ORP: -78.2 MV DO: 0 Sc: 1655 1/cm Tuy: 0 - Sauphil C 1650 1605 GW MAWIBA-U, F I wortellow, I fethed w/HAOS, I outstow w/HNOS - Double Transver - No lock on Monant 1708 At MANWO30, setting up compussor and genutar for poseumless, will leave nityon at site owing let for full purge. DTW 21.90 TOC Startal compassor, started porging DTW 22.85' TOC, 1.0 /min pupul ~2.5 L prior to suply paramters Tup: 8.83°C, 9660 pH: 7.62 ORP: 66.4mV DO: 8. SL: 413 Yem 7mb: 0 - Allowing for purge of well, saying every 20 minutes - Download transducer and bawatin pue son seem 1755 PTW 29.69' TOC 1815 heavy nityen bootle at well site to Pers purge well onor yest



A Potter Monsonto 112. Rodrogen Spring Zoke 5/11/16 0903 DTW 18.25' 10L @Q10 Started to purpe and suple 0917 Purperate ~ 1.75 4min DTWE 60.84' TOC, pyed 113.25.2 Temp: 6.30°C PH: 7.51 ORP: 151.7 MU DO: 6.57 1/2 St: 6.57 1/cm Tub: 0 - No Transdocer 1032 AT MMW OIS, DTW @ 8.46' TOC 1040 Started pumping. WILL he supply 1605 GW MMWOLE - U, F, Shis MSDE 1147 DW C870' TOL Took MS/SDS Sayles. @ 1123 DTW @ 8.65' pyrl 5-0L Tup: 7.64°C pH: 7.29 02P: 160.4 mV 00: 7.03 X: 419 3/cm Tup: D - Dowled Turken 1200 Filling out drien it Cestuly. At MMW029 PTW CB.-16' TOC Saughor well : 1605 GWAMW029-U, F DTW@ 13.641 paged 14.75 L Tap: 0.12 °C PH: 6.74 ORP: 174.1 WV DO: 1.27 1/2 Sc: 1562 1/2 Ten lub: D - Donnland Tunber

1305 At MAW 033 DING 6.29' TOL

A. Pettled Monsento 5/11/16/13

L. Podrijen Spring 2010

1323 Issues with sombe, newly zono Do,
remail soule for sayone cylider on Do souron

15 fondeil, ne plag bonde on cylider.
- Parantens at 1315 are of f.
1325 Drue 13.76' Toc

Note: Permissue was given by Monsouto

Note: Perenssum wer given by Marsouto

Personnel to sample 10x the Low flow

volune and establish stable perentus in the

Spring of 2012 somplay round. This criteria

was carried open to the 2010 sampling yound.

This well will not had the low flow

Method and is too large to pump dry with

a bladder pump.

- Frith parameters @ 1325

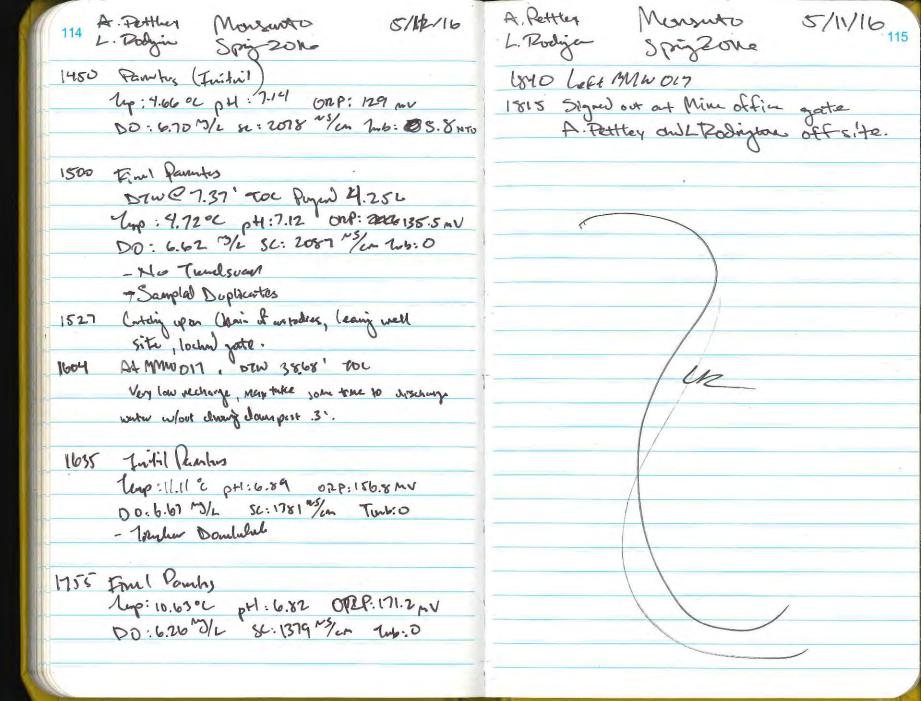
DTWE 13.96' Purperdune 30L

Leap 16.66°C PH: 1.79 OPP: 78.0 mV

DO: 0.23 m/L SC: 473 N/cm 70.6:0

1915 Sarpen prell. 1605 GWMMW033-U, F First Parks: DTW 26.26' TOC pupul 1052 1emp: 6.66°C pH.1.70 DRP. 49.2 MV DO: 0.05 M/L SC: 465 M/cm lub: O - No Turchem

H37 At MNW032, Sampling Deplicates.



30.30 "Hg D.D. Sunar stowing

0.00 mg/i at t, mor. No ross

A Retter Mayato. Clear, ~500 117 L Rodry Spizzole light breeze 6700 Puping samples to ship out today. 0800 helt the horce. 0805 Facing up and gesting supplies for the day. 0815 At fir get , pidijup Natmen extinums. 0830 Pichul up 2 "200" and 1 "200" tank, Suppos of 2"300" + ann, to tal was \$ 130, May mul to RE Dayerstan what fotal. 0838 Signi in cut Mine of the , produl up battern, falled to Shuma. 0901 At Fox Slup, picky up coolers for Alw Dry. Pre-opid vehicle. 0921 At Henry Crete 09-43 MMWOZ3 DTW 106.60' TOC 0949 Started pumping. 0956 Lutitil Panetus DTW 106.60' TOC pupe untre: 0.85 Tep: 9.26°C pH: 6.90 ORP: 95.9 MV DO: 0.36 1/2 8: 974 1/m lub: 0 1031 Final Paranters DIW 106.62' TOC, total pry 29.5L lenp: 9.16°C pH: 6.99 ORP: -113.3 NV Do: 0.02 1/2 5:983 /cm 100:0

- Downledy Tundrar.

1046 Cleanly well site, musing to next ste

5/12/16

A. Pottler Monsouro 5/12/16 118L 200 mjn 2000 spring NSO° brucy	A. Rettler Nonsules 5/12/16 L. Rodnigue 3/20the 119
1103 At MMWOII	1440 Downland Irendum
1107 PTW@13.55' TOC, Heedw to wijust	1548 Find Pointers
purply vestre to reduce Areadown.	lup: 9:45°C pH,7.10 ORP: 4.33 7/2
1125 Iniful Panutus	DO:4.33 1/2 SL: 925 1/cm Tm5:1.3
100p: 10.14°C pH: 7.35 ORP: 79.7 MV	- Dould Julyan
PO: 54/ 1/2 SC 833 US/CA TOUB: O	1601 At MMW 010
1155 Fin Penulus DIN 13.75' TOU, 8.75 tota / pgul	DIWC 0.55' TOC
Temp. 1031°C pM: 7.28 ORP. 94.4 MV	1008 Indial Parenters DIWE 1.00 TOC, 1.0 1/mi
DO: 5.73 1/2 SU: 837 Tab: 0	Tep: 8.02°C pH: 6.74 ORP: 169.1m
- Double husbar and Bow.	DO: 2.24 M/L SU: 1717 NS/cm Test: 1.1
1228 At MMW 028 DTWC 63.96 toc	1633 D.O. was one the flying tost
1282 Run air corpus dem. Heald to note t.	possibly due to artosking effect
1309 Instal Parawker @ 1235	of le well, very fest rechange, louted
DTW@ 63.96' 100, .75 /MM	in the middle of a soull marsh.
Tup: 8.64 °C pH: 7.73 on P: 568 Blan	DTW@ 1.61'TOC, 25 L total purpe
DO: 7.03 M/L SC: 568 M/LM 766: 0 HTV	Temp: 7.04°C pH: 6-45 ORP: 175.9 mV
1311 Fim1 Porum DEW 63.96 TOL, purged 12.25L	DO: 0.73 M/L SC: 1793 /cm leti 0
lap: 8.35°C pH: 7.53 ORP: 101.2 MV	- Dounland for or low.
DO: 6.88 M/L SC: SUG MS/cm Tunb: D HTU	1705 Signed out at the Mine office.
- Transducer is bad lid not dounted. Dounted	2 Rodgin and A Retthy Off site.
avor. Lewwood replacing.	
1347 At MMWOLD DIN 6201.98, 10C	(
1400 Initial Payantus DTWE 202.08 You sune you . 25 /mi	- Ne
Temp: 10.45°C pt: 7.78 ORP: 100.2 mV	
DO: 9.10 mg/L SC: 900 mg/m 1 mb: 0	
180	

Monsanto A. Pettley Mongue L. Rylveguez L. Rodinjun 5/13/16 A. Pettly 0620 MWH Sigins calibration on 45 T Meter 5/n 70063 - pH 4 reading = 4.02 @ 17.88 c No cal. recold. - pt 7 reading = 7.0/2 @ 17.84 c No Calibration Neederd - PH 10 reading = 9.98@ 17.81 c NO Calibration world. = Conductivity 1409 reading=1408 17,212, NO calibration needed. - ORP Zobells reading = Z30.7 @ 18.31'c No cal. reided. - & NThe reading = 0.1 UThis, No Cal. Needed, - 40 Na (eading: 39.5 Wills @ 18.3' No cal redal - D.O. reading 7.07 mg/L & 18.07 c NO Cal. Necded BARD 30.20 "145 0140 Parformed Prie Op on track, review JSA 0840 (7athul sipplier for the day. Dupped of samples at the Mongato common for sligar. Will need to tuch delivy to assure sold of arrival. 0855 Signed in an sate, picked up redio 0910 Dring they Daymore pit, acces and what

600, sunwy 121 Spingsons higher breeze from ming activity. Heals to her and attente next. . Samply in Ferred Valley. 0130 At MM009 DTW @ 211.05' TOL 0945 Initial Parameters DTW@ 211.15' toc ,0.25 /min lap: 9.54°C pH: 7.47 ORP: 140.1 MV DO: 7.52 3/2 SC: 625 1/2 Turb: 0 1035 Discovered tubery length to be incorrect (350) in 2015 sumply, chipal to 552 and am puryly 34.12, from the previous 222.
1110 First Parades Decede 211.15 70c, 35.85 L paged Imp: 9.35 °C pH: 7.10 ORP: -1.5 MV PO: 03/2 Sc: 639 1/cm Tub: 0 - Dounded Ban con hulen. 1127 Packed up egrypur, Welled to next site. 1140 Looky for Lovehole 1147 MBW 112 ONWEIT.38 YOU, TO @ 17.59 , waterin DIZY enduponly. 1204 MMW027 - PTW & 91.69' TOC 1215 Inital Pantas DTW@91.75'70c, .55 /mi lup: 8.99°C pr.7.25 ORP: 91.3 AV DO: 4.29 7/L St. 1101 No/cm Turb: 0 1295 Film Printers DEW 91.75° TOC, 12.25 L lesp: 8.34 pu: 7.07 GRP: 104.9 m DO: 3.09 7/2 Scills /cm lub: 0

5/13/16

- Dounloaded Fairscher

1714 Lean monwost

1720 Significat at Mine office

L. Rodryman A Pettley off site

122 L. Dodyin Sprig 204e 5/13/16 1245 A+ MMW 035 DTW 92.81' TOU of Actine Wasp hest in casing 1250 Inital Panders. DTW @92,88 Toc, .45 /pin lemp: 8.30°C pH: 7.03 ORP: 108.4 MU DO: 1.83 13/2 Sc: 1444 / Ca Tub: 0 Final Parameters DTW E92.87' 20c, 13.75 Leve Tup: 8.29°C 14: 6.95 ORP: 120.5 MV DO: 2.06 " XL Sc: 1456 " /cm Tunb: 0 - Davidele Cundum. 1335 MBW107 DTW @34.50' TOC, TO 34.25' - Not dry , hes water Too deep to run penestalthe pump, no buster small engly newill available, no bladder purp. 1358 MMW037 DrW @113.30' LOC EDupliced 1: - Tried runing with compressor and would't people water, switched to Hitym, A-OK 1410 Inital Parauters Drw@ 113.35' , O.4 4/min Temp: 9.87°C pH:1.57 ORP: 124.5 MV DO: 5.66 4/2 Si: 436 /cm 100:0 1500 Ein Perentes DTW@113.35, 21.51 fetal page lesp: 9.60°C pH: 7.51 012P: 137.8 MV PO: 7.76 10/L Sc: 428 7cm lus:0 - Domledo Fundans - Souphed Dry - NO Samph

Marine 5/14/16 Spig 2010 Noso, War, 125 Apotho L. Rodinger 1012 Hold to drawdown western to a stable sen) butine traing weather scuplus. 10-13 May have hit stabilization point. Will be Deducing #00120 Intal Powers DOW @ 38.11 TOL, .75 /min Top : 7.76°C pH: 7.01 ORP: 148.2 AV DO: 2.37 7/2 82: 246 /m 1 mb: 0.3NEU 1120 Find Parentes Drive 72.01 toc, 87 Lpy lup: 10.19°C pt. 7.06 620: 182.2 MV DD: 2.15 10/2 Sc: 277 1/cm tub: 0 - Downland tendour and Boro. At MAN 025 lowhen inled like on bladder purp. Repairs. 1157 Needed to by pass our lumon PVC dirk. NEEDS REPAIR * Bladder into bones Fitting sheard off plastic line, needs new bus Entings 1148 Initil Pombes DTWC 38-64 201, 0.2 7 min leg: 11.08°C pH: 7.87 OPP: 127.7 MU DO: 3-66 17/2 &: 288 1/m Tub: 0 1225 Find Points DTWE 40.10'200, 5.56 pergen

DO: 1.16 MYL &: 289 M/m 166:0

- Downald by dow

A Retther Monsoner 5/14/16 126 L Radya Spry2016 1247 Pidul up Hitro. Cylinder Left at manooro From Monley , held to regot one 1259 MBW 099 - sized up bailer from Fore w- have, does not fox on bong stonpries. 1301 DIW @ 1.91' TOC, not enough water to man flow thingh cell, will fell Cal, cop on neugure 3 permetos sets from stone. 1319 Pumped and sapend polan y 1335 Roping of Nitor tow on colles (to the ken) ut Dayweten Shap. 1353 MAW024 \$7WE54.19' LOC. Intel Parkey Tung: 4.612 pH: 7.21 GRP: 043.9 px DO: 2.72 7/2 82:933 2/2 Ins: 0 1417 Fine Punks Druce 54.9.9 200, 14.02 payed

Tup: 8.07 % pH: 7.07 ORP: 1521 AV 10:2.30 Mole Sc. 1026 % Lows: 0

1438 Triful paules Drue 3.35 TOC, 0.7 Ymin

1453 Final Dutes DAV 3.30' Toc 14.25 - pmpl

Imp: 7.74°C pH: 7.06 02P:163.4 MV 00:8.78 mg/2 Sc: 686 mg/cm 745: 0

Tup: 7.37°C pH: 7.06 02p: 161.2 mV 00: 8.97 m/c sc: 680 /cm 7 cmb: 0

MARRY - Downsled town am

1433 At MMW013 DTW @ 3.25 TOL

1545 Fine Panular DTW 2731 202, 1525 L pugul lup: 8.12°C pH: 7.30 orp: 164.6 m DO: 9.51 M/L &: 554 M/m Tub:0 - 40 Trumber 600 heavy Dougers to Asur 1623 Signed out ext mine of cia. L. Rodrigin and A. Pettay office.

1501 MMW034 DTW@ 7.10' TOU

1505 Intal Parters DING 7.25 TOC, . 35 / min

lesp: 7.79°C pH: 6.91 ORP: 172.1 MV

DO: 8.76 M/L Sc: 680 /m Tus: 0

Monsanto 5/15/16 A. Rettley Dlow MWIt calibrating the YSI (e920 water quality maker. 5/N# pH 4 Rading: 3.88 No co. Needs. pH 7 reading = (0.95@ 20.60c, cal. to 7,00. Now reading 7,00 good. -pH 10 reading = 9.98 @ 20.37 c No Cal. Conductivity 1409 = realing 1385 @ 20.50'e . catchy Cal. to 1409 good. - ORP Zosells = @ 20.18 ¿ reading 228.5. NO cal, Need. - NTU D. reading: U.D @ 24.02'c No cal. - NTU 40 reading = 39.5 NThise 20.0° NO CN. - D.D. reading 7.47@ 29.90 in Hs No cal Needed. 0820 Arrived at the Monsanto 0825 At the Monsato office, pickel up (2) batt. For radio. Also galan (2) COC; from Shawanais office Class #5. 0845 Ar: Le at MMW032

T,08602 5/15/16 1. Pottag129 maw 032 Sample efter popul log on Time 0915 pH 7.36

Hz0 Land 22.80ft ORP 190.2 mg

Purge Rate 0.75 4mis Dom/L 7.06 Completive Porge Volume 15.06 Sp. C. 382 1/km Temp C 6.13 C Torbility O. ONO previous duy (5/11/16) 1005 Arrived at MMWOZO Started WOSK. DTW: 274.25 TON. Beginning Parameters = vol 2 L. Emp 8.10°C, pH 7.41, ORP 187.1, D.O. 9.39, SC 1410, N/4, 83.4 Flow inconstant. Downloaded transducer data. Stude around pump line. Data appears to be void from 4/16 to 5/16. 1120 Sampled 16056WMMW020-F,U find parameters = WL ZHT 274.25, Total removed 49.56, temp 8.77c, PH 6.96, DRP 1647, D.D. D. 20, SPC 899, NTU 0.8. 1200 At MW-15A DTW= 18.34 TOW begining parameters= 12.69, pt 6.78, DEP 174.8, D.D. 3.14, SPC 1655, NTW D

monsanto Spring 2016 10.~~ 45.E T. Oslome 5/15/16 A. Pettley 1240 Sampled 1605GWMW15A Final Parameters = WC 19.60, Total 8.01 temp 7.994 pH G.71, DRP 172.8, D.O. 3.51, SPC 1677, NTU O.6. Note: low flow startal at 12:15 and ~ 1.21' drawdown, pumme rate and WI stable after that good. 1310 Arrived at MMW030 to continue sample. Well has recovered and sampling busins. DTW: 29.11 340 Sampled MMW030 16056WMMW030 F, U. Fand = WL : 33.00, VOI 10 L. Temp 8.72'c, pt 7.72, DRP 1425, D.O. 2.53, SPC 405, NTLing. 1355 At MBWOOLE DTW. 2.25, Starting Purze w/ Paraskeliz pump. beginny parameters: . 5L, Temp les9'c PH 7.72, DRP 164.5, D.D. 6.74 SPC 1105, NTU S. 1430 Sampled 1605 GWM 8W006 first parametr: WL 2.33, purg our . 25 L/n.s, Vol 5.25 L., temp le. leti, D.O. 6.55, SPC 1081, NTU O.3, 1630 Downloads Trandem Mw-154. NO 10 ck.

S/5/16

A. Pettley
1645 Note: Must returned Sampling

Eginpment to the Mousanto

office (Shawness office).

(rade unlocked (Sorth gorte) and

Main door accessed. All door's

and gates relocked when departed

Also, Nitrogen tanks returned

to Dezerstrom (3) full t

(2) empty. Crafelle for tanks

Placed war drop area.

-1650 MWH Sizned out

at Gate.

Monsanto

Cloudy 45.

B. Jones 121 E. Yeager 5/9/16 1130 sign into mine stime watch satity video 1230 go to Fox shop prop excipient 1420 arrive at black Foot New MST19 eslibrate pH 4 - Flow pate wit possible due to high Flow Stream guys submergel will reference USGS street guage at Black Roof River 1505 Temp 12.5°C DO% 94.0% PH 7.48 DO"3/L 8,0"3/L pHnV -59.1 TO Sec Cont 2330,5 cm ORP 107.7 mV Turbility 13.5 Ntu Card 251.3 1/2m Spc Cond 329.7 /cm 17:41 MST 050 Temp 16.1°C PH 7.99 Spe Cond 233.0 % ORP 131.9 aV Spe Cond 280.9 % Turb 3.02 NTU DO % 103.2 Acr Trup 49° F DO m/L 8.10 18:32 signs sot more store

T. Obon

6 32 28 1 39 0 4 1 1 ISBN 978-1-932149-52-4

122		1
0648	alibrate VSI	professional plus
	held	, t
Baramatuc	pressur 30.10	on alibration
DO1/2	85.31/> 84.7 8.85 -> 8.79	7 %
Do 72	8.85 - 8.79	372
SPC	1903 温水	eul
C	1409 m	tur cul
ORY A	0 16C 236mV	really 236, 1 mll
pH 4 .	entry 4.00 at	to cel
PH 7	Teally 7.00 af	for cal
PHIO	rending 10.00 a	for cul
0830 An	re at MST,	050 collect stran
Flow	data	30 what strem
0932 ALLY	- + MOSOS	30 collect strain
Flow	- data after	water supli
W45	collected	
	Sample #1	5mple #2
Temp oc	944	8.3
SpC		934
C	640	637
Dolo	64.5%	54.5
Do my/L	7.31	6.28
pH	7.47	7.14
ORP	92.6	17.7
Turbility	0.29	8.27
AM tip!	35° F	35'=

1045 arin at Ma	57092
water Temp & 7.3°C	
Spec C 564.1	
c 373.4	Turbility 1.38
DO16 59.8	Av Temp 35°F
DO 10/L 7,15	

1209	aWie	at MSTO8	(E
Time	12:18	12:22	30-12:26
HOO Ter	-	8.9°C	9°C
Spa	456.6	1455,6	455.1
c	316.3	3 15.9	315.8
00%	88.3	86,0	85.5
Doush	10.21	9.84	9.80
pH	7.88	7.85	7.82
	17.2	12.1	19.5
Turbility	1.19	0.87	0.99
A. Tapi	35°F	35"12	35°E
\$344	aprine o	it MSTOGO	
Time-	1345		*
	9.4°C	PH -	7,91
		ORP	16.3
C	394.0	2 A 2	0.55 Nts
DO 1	8666 Z		35° F
7/2 10	9.52		÷ (1)

Doil. 72.0 Dors/L 8.45

Turbility all All Trup 35 F

7.45

18.6

PH

ORP

124			
1435	Acrine 6	D MST	096
	14:40		0% 1087
	m C 13,2		11, 29
	664		1 8.38
	514	OR	-P 10.8
	3 228	Ar	Texp F 35
15:10	Arrive @	M568	204
	15:15		Po 6 105.5%
	m L- B.8 C	_	Do hoji 11. 42
			PH 8.12
à	648.6		ORP 17.6
	ty 3.92		Av Tenp 35° F
01070	19		
15:40	Arrive e	MS 6 00	.5
	Suple 1	Sample	
HOD TE	·c 7.1	7.1	15:35
5-0	675.5	6733	671.6
6	444.5	447 2	447.1
Dail	72.0	66.0	62.5
DU1-) niu	7010	6 Z 1 2

7.87

7.86

14.8

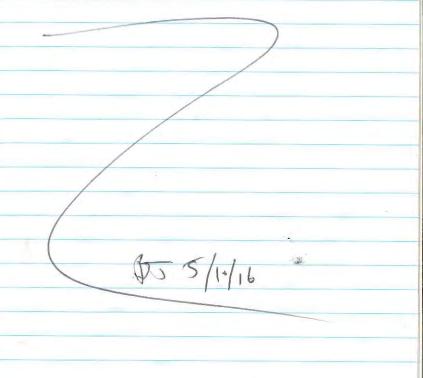
0.20 35' F 7.51

7,79

20,9

35°F

1620 Arther at MSTa	094
	Do% 74.3%
H20 Tomp 11 C	00 3/2 8.05
Sp (330,0	PH 7.84
C 241.6	orp 20
Turbitity 0.63 Ntu	AT trup 35 F
1700 Sign out at mine	off/on



B. Jones T. 03505 126 T. Osborn 13 James 127 5/11/16 Spring Sampling 5/11/16 1020 Arrive at 0615 Calibrate YST hand held M56006 420 Temp 14.3°C AN Ten 43°F Tim 10:25 SpC 1782 after eal 7.91 Do 12/2 H20 Temp 7.2°C C 1305 betwe cale/ 1409 after PORP Sp C 1708 7.50 pH 4 4:01 before cale / 4.0 after 7.05 before cale / 700 after 12.8 Dola 65.9% Tunbolity agonto 10 9.95 before carc/ 10.0 after 11,10 Arrive at M5T095 Time 11:20 Air Teup 43°F DO @ Bar. Pres. 30.30 - 8.20 after CAC ORP @ 15°C - verying 238.5 - 241 A DO 7/2 8.15 H20 Tap 11.8°C - calibration complete pH 7,88 945 707 ORP 17.7 0815 Drip 2 Sample coolings off Dol. 77.0 Wibility 0.39 NTC For pick up (FedEx) at the Monst. 11:57 Asshe at MST 069 Air Trup 43'F Time 12:15 0840 sign into mor office H20 Temp 10.4°C DO "1/2 8.03 Spc 1563 pt 7.51 2 1129 ORP 44.7 0900 inventory New Shipment of Samples 1000 prive at MSG007 Do 1/2 72.3 Turbidity 0.36 No Time 1005 Kir Temp 43°F H20 Temp 6:3°C Domy/ 3,4 12:50 Arrive at MBW 135 Souther not working move to went s:te 5 d 634.3 pH 8.00 408.2 ORP 5.6 Do1. 27.8 Turbilly 0.70 NTU

T Osborw 5/11/16 B. James 129 17:10 Armbe at MST 057 Time 1715 DO 3/2 7.10 H20 Temp'e 1670 pH 8.04 Spc 412.8 ORP 11.5 C 347.2 Turbidity 0.98 00% 73.0 Air Tang F 51" F 1800 Sign out at nive office

B. Jorg	T. Osborn
130 Monsanto T. Osbon 5/12/16 Spring Sampling	5/12/16 Mensento Sampling BJONES 131
100 0620!	11:55 Arrive @ MSTOHY
The cal readings: U/Solution After CAL	Time 12:05 109/ 9.98
Deg. C: 16.0	Water Panje C 13.5°C 14 8.17
D.D. 1/1: 85.4 @ 30.30 Bu. 145. 81.2	Spc 699 ORP 38,6
0.0. 8.45	C 545 Tubility 1-33
SPC 1 2.2 1691	DO1, 95.7 ASTERDE 53°F
SPC 1 2.7 537@ 163'C 1409 C 1 1.7 537@ 163'C 1409 PHY 407 - 399	12145 Ann @ MDS034
016.1 - pt 10-st 91 - 10.01	Time 1308 DO19/2 3.46
H. M. I	Water Rep C 17.5°C pt 7.54
Orp: 116.4 @ 165'c 1 +> 241 241	SpC 1040 ORP 23.0
- YSI Professional Plus handheld	C 891 Torbilty 0.55
Serral # 11 E100 485	DO1/2 36.7 X'F Temp 53°F
-Car compete @ 0700	1355 Anne at MOTOSI
- Drop off Suples Q Lab 8:20an	Site was DRY No sumple taken
840 sign into mine office	1948 atthe at MST136
0400 and at for shop get more	Tim. 1445 Dom/ 3,90
Sample bothel,	Water Tong C 18.3C pH 7.49
0930 payal MG 135 kmg	SpC 391.6 ORP 29:4
1045 write at m37645	C 343.3 Tribulk 6.59
The 1000 1 900 pH 802 8.82 Who Tan C 11.6 C U.6 C ORP 38.7 38.2.	DO1. 42.7 A: Tang P 61F
With Tang C 11.6 C 11.6 C GRP 38.7 38.2.	7550 Arabe at MST275
Sp C 693 693 Tublety 1-08/1-80	Thum 15:55 00 3/ 6:77
C 515 516 Av + trup 537 536	When tap C 21.6°C pH 7.55 SpC 109.9 ORP 43.6
Do'1, 89.0 89.1	
Do myle 9,62 9.68	C 102.9 Turbidity 45.5
	Dol. 78.0 Air Temp F 61 F

		in the state of th		B.Jony
132			Monsanto	T. Osborn 133
1630 Arrive at MST226		5/13/16	Spring Supli	ng
· · · · · · · · · · · · · · · · · · ·	Pample 3:	0625!		
Time 1650 1653	1700	Precale 1	reading:	,
Water Trape 7.4°C 7.4°C	7.4°C	17.4°C	/78.1 Do %	1.61 00 hg/L/
	353,8	10.6 SPC	/8.9 c / 7.8	1 pH - 84.8 punu/
	234.9	64.4	orp (,
Dol. 80.6 75.2	74.8	calibrati	ion: Befor	AR
Dong/L 9,44 8,94	8.84		1850 3.97	
PH 7.26 7.16	7,04	-7 0	19.0°C 6.98	No CAL needed
ORP 58.4 60.7	53,8	-10 e	19.3°C 9.97	NJ CAL Needed
Turbility NTW 2.64 0,92	0,62	C: @	79.1°C 148	1409
Air Tamp : F 63 : F	63'F	orp: e	18.0°C 23	4 2285
		00 e	23.9°C 6.4	4 2285 2% 78.5% 7.16
			Ber. 320 30.20	
			Complete 0700	
		0820 SIRN	into more	effice chape out
		tadios		,
	9	0910 KM.	ne @ 11571	32 di Tap
		Jane .	orismole 1 Do	17/2 Same 2 0920
		Water Tando	1375 7.8C	780
		5p (°	1 304.0	303.0
		CD	205,8	17027
		00%	79.5	1766
Ro	+ 1	DD 7/6	4.33	9.33
* '		eH ORP	7.85	7.85
			7.85 55.0	54.6
		Turbility !	5.91	9.33 7.85 54.6
		0.01440	- 11	- 02

at MSTizz 1320 Arrive. Time 1325 DO " \$1 7.77 PH 7.88 H20 Temp C 18.6 C ORP 26.5 Spc 299.9 Turbility 16.2 NO c 263.3 A: NTemp F 50 F Dol. 34.5 1428 Arrive at MST 144 00 3/2 6.18 Time 1425 Water Tange 11.10 PH 7.57 SpC 791 OR? 42.7 c 581 Turbility 13.4 NTU DOC. 57.0 AITTEMP F 50 F Fine To 1450 Arrive @ MDS025 Time 1455 DO 7/2 5.74 pH 7.06 H20 Tange 11.00 DRP 28.2 SC 1333.0 £ 977.0 Turbility 12-4 Nec Dolo 53.3 ALTTERP P 50 F 1530 arrive @ MST 269 -PRY-No Sample

T. OSLOOM

B. Janes 135

5/14/16

B. Javes 137 E. Yewjer

1220 Arrive Q	MBW085
time 1307.	pH 6.86
Hopewal 8.5'	PH 6.86 OR8 64.7
page she 0.5L	Dom/ 7.17
Consider Vol 19.5L	SpC 364.1
Tap Koc 5°C	Twobility 3,16
1410 Amue D.	MBW 130
1470 Amue @ 1425 pamped	DRY
1500 Arma @	MBW048
T:m 613	pH 6.59
H20 Leads 1.10	ORP 48
Purge Rate 0.085L/mb	ORP 4-8 DD 0.42
Complete del 7,86	Sp C 194.7
Temp 420°C	Furbidity 2,96 NTO
1640 Aprile @ M	
1640 AMIR @ M Time 1755 Hzo Ismil 1,50	PH 6.5
H20 land 1,50	ORP 71.8
puge rate 0.07	Dom 7.12
Campbeller Vol 5.94	
Convidental 5.96 Tens Hoc 626	Spc. 166,5
Temp HOC 6.26	Spc. 166,5 Turbidity 4,25
1835 Artine @	Spc. 166,5 Turbidity 4,25 MBW 135
Temp 1/0 C 6.2 C 1835 Artive @ Time 1840	Sp.C. 166,5 Turbidity 4,25 MBW 135 pH 7.04
Temp 1/0 C 6-2 C 1835 Arrive @ Time 1840 H20/20/ 1.6	Spc. 166,5 Turbibity 4,25 MBW 135 pH 7.04 ORP 63
Temp 1/0 C 6.2 C 1835 Arrive @ Time 1840 H20121 1.6 purge rate 0.41/min	Spc. 166,5 Turbidity 4,25 MBW 135 pH 7.04 ORP 63 DO 1.60 7/L
Temp 1/0 C 6-2 C 1835 Arrive @ Time 1840 H20/20/ 1.6	Spc. 166,5 Turbibity 4,25 MBW 135 pH 7.04 ORP 63

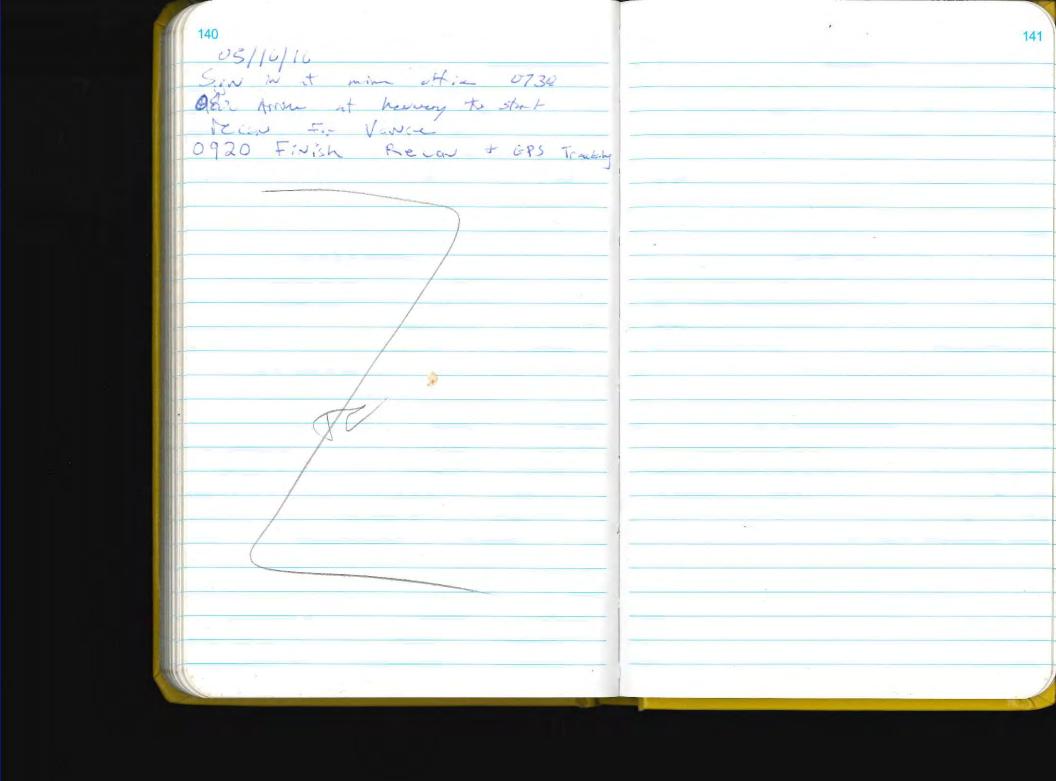




TABLE A-3 2016 FALL SURFACE WATER FIELD PARAMETERS P4 MONSANTO, IDAHO

(Page 1 of 1)

Matrix	Station ID	Water Temp (deg. C)	Spec Cond (uS/cm) @ 25 deg. C	Cond (uS/cm)	D.O. (% sat.)	D.O. (mg/L)	pН	ORP (mV)	Turbidity (NTU)	Air Temp (deg. c)	Discharge (cfs)	Comments	Date	Time
SW	MDS025						DRY						9/27/2016	1145
SW	MDS026	7.8	1636	1100	N/A	N/A	7.99	50.4	74.5	16	approximate	be measured, seeping from area ely 30 feet wide along hillside. lights in several areas.	9/27/2016	1045
SW	MDS030	18.4	5.6	5	N/A	N/A	8.49	73.5	1.87	20	feet wide. C	f toe of hillside approximately 3 an not collect flow, seeping in several locations.	9/27/2016	1440
SW	MDS034						DRY						9/27/2016	1212
SW	MSG004						DRY						9/27/2016	1504
SW	MST019	14.7	331	267.8	N/A	N/A	9.31	58.2	3.14	21	57	flow taken from USGS station, staff gauge 1.90.	9/27/2016	1720
SW	MST020	14	314.6	249.9	N/A	N/A	9.26	61.3	14.7	23	57	flow taken from USGS station, staff gauge 1.90.	9/27/2016	1755
SW	MST044	14.5	751	600	N/A	N/A	9.16	41.9	1.3	19	3.26		9/27/2016	1245
SW	MST045	17.2	767	652	N/A	N/A	9.21	54.2	1.55	19	4.15		9/27/2016	1340
SW	MST069	12.8	1636	1253	N/A	N/A	8.81	60.9	8.51	23		w in tall grass, can not isolate annel to collect flow.	9/27/2016	1640
SW	MST144						DRY		•				9/27/2016	1135
SW	NWPond	23.9	4.5	4.3	N/A	N/A	9.62	652	149	23	Ро	nd sample, no flow.	9/27/2016	1545
SW	SEPond	23	163.9	157.3	N/A	N/A	9.96	60.6	517	23	Ро	nd sample, no flow.	9/27/2016	1615

cfs	cubic feet per second	NTU	Nephelometric Turbidity Units
deg. C	degrees Celsius	N/A	Parameter not collected due to meter malfunction
g/L	grams per liter	SW	Surface Water
mg/l	milligrams per liter	uS/cm	microSiemens per centimeter
mV	millivolts	% sat.	percent saturation



Project P4 Production	on SE Idano Mine-Specific	c Se Program – Fall 20	16 Svv Sampling	
ନ୍ଦ୍ରମ Date <u>09 / 24ଟ</u> ୍ର	/ 2016 Arriv a	al Time <u>1145</u>		
Field Personnel				
Emily Yeager	<u>r</u> S	ignatures		
<u> Tom Ösporn</u>	Aavon Pettley			
SITE DESCRIPTION	ON			
Station Name	lest DUMP	Seep	Station Number <u>MDS02</u> S	ے
Latitude On File	Longitude On File	1		
Elevation On File	Datum <u>N</u>	NAD 27 Photo I	Number <u>3</u>	
Site & Stream Des	cription			
Surface Water Cha	aracteristics (color, oc	dor, appearance):		
SAMPLE COLLEC	CTION	,		
Collection Method	: 1L bottle, Horizontal-bot	ttle, Swing-sampler, Otl	ner(). Up-stream / Across-strea	m
Sample ID:			Sample Time:	
		ld Measurements		
		\rightarrow		
Parameter	Sample 1	Sample 2	Sample 3	
Time				
Water Temperature (°C)				
Specific Conductivity (µS/cm) @ 25° C			·	
Conductivity (µS/cm)				
TDS (g/L)				
Dissolved Oxygen (% sat.)	/			
Dissolved Oxygen (mg/L)				
рН				
ORP (mV)				
Turbidity (FTU)				
Air Temperature				

	09 /	-	2016	<u>ne-Specific Se F</u> Time _				 mber <u> /√</u> \̂	D506
Comj	pleted by:	E.Yeage	r Tababa	om_A.PeHa	\ Checke	d by: E.Ye	eager T.9	born	
			1	Flow by Car	oture Meth	od			
	Measure	ment Numl	ber	Time	(sec)		Volum	e (L)	
				Elow b	v Motor				
				FIOW D	y Meter	/			
						/			
[R.E.W	<i>I</i>		L.E.W		al Width		ft	
				nber of Subsection	s Based on St			ft	
		l Width (ft)		nber of Subsection Number of	s Based on St Subsections		Subsection	ı Width (ft)	
		l Width (ft)		nber of Subsection Number of 8	s Based on St Subsections - 10		0.2 -	n Width (ft)	
	Total	l Width (ft)		nber of Subsection Number of 8	s Based on Si Subsections - 10			n Width (ft) 0.3	
	Total	I Width (ft) <2 2 - 4		Number of 8	s Based on St Subsections - 10		0.2 - 0.3 -	1 Width (ft) 0.3 0.4 0.7	
	Total	I Width (ft) <2 2 - 4 4 - 10		Number of 8	Subsections - 10 - 12		0.2 - 0.3 - 0.4 -	1 Width (ft) 0.3 0.4 0.7	
	Total	I Width (ft) <2 2 - 4 4 - 10 10 - 20	Nur	Number of 8	Subsections -10 -12 -15 -20 -25	ream Width	0.2 - 0.3 - 0.4 - 0.7 -	1 Width (ft) 0.3 0.4 0.7	
	Total	I Width (ft) <2 2 - 4 4 - 10 10 - 20 >20	Nur Depth	Number of 8 8 10 12 15	s Based on Si Subsections -10 -12 -15 -20 -25 ement (Ft. Be	ream Width	0.2 - 0.3 - 0.4 - 0.7 - 1.0 -	n Width (ft) 0.3 0.4 0.7 1.0 2.0	
	Total	Width (ft) <2 2 - 4 4 - 10 10 - 20 >20 >20	Nur Depth <2.0ft : 0.6	Number of Subsection Number of 8 10 12 15 20 9f Velocity Measur	s Based on Si Subsections -10 -12 -15 -20 -25 ement (Ft. Be	ream Width	0.2 - 0.3 - 0.4 - 0.7 - 1.0 -	n Width (ft) - 0.3 - 0.4 - 0.7 - 1.0 - 2.0 - = (TDX2)	
	Total Total De	Width (ft) <2 2 - 4 4 - 10 10 - 20 >20 >20 epth (TD):	Depth	Number of Subsection Number of 8 10 12 15 20 of Velocity Measur	s Based on Si Subsections -10 -12 -20 -25 ement (Ft. Be g rod); >2.0ft Distance from	ream Width	0.2 - 0.3 - 0.4 - 0.7 - 1.0 - /2) and 0.8TD	n Width (ft) - 0.3 - 0.4 - 0.7 - 1.0 - 2.0 - = (TDX2) surement	
	Total	I Width (ft) <2 2 - 4 4 - 10 10 - 20 >20 epth (TD): Depth 0.	Depth	Number of Subsection Number of 8 10 12 15 20 of Velocity Measur D (standard setting Meas frement) 8.8 (circle)	s Based on Si Subsections -10 -12 -15 -20 -25 ement (Ft. Be g rod); >2.0ft	ream Width	0.2 - 0.3 - 0.4 - 0.7 - 1.0 - /2) and 0.8TD Velocity Meas	1 Width (ft) 0.3 0.4 0.7 1.0 2.0 = (TDX2) surement 0.8 (circle)	
	Total De Distance from	I Width (ft) <2 2 - 4 4 - 10 10 - 20 >20 epth (TD): Depth 0.	Depth <2.0ft : 0.6 1 of Velocit 2 0.6	nber of Subsection Number of 8 10 12 15 20 of Velocity Measur D (standard setting Meas frement 0.8 (circle) ction Velocity	s Based on Si Subsections -10 -12 -20 -25 ement (Ft. Be g rod); >2.0ft Distance from	iow Surface) : 0.2TD = (TD	0.2 - 0.3 - 0.4 - 0.7 - 1.0 - /2) and 0.8TD Velocity Meas 0.2 0.6	1 Width (ft) 0.3 0.4 0.7 1.0 2.0 = (TDX2) surement 0.8 (circle)	

Distance from	Depth of Velocity Meas Frement <u>0.2</u> <u>0.6</u> <u>0.8</u> (circle)			0.2 0.6 0.8 (circle) $\frac{1}{2}$			Distance from	<u>0.2</u> <u>0.6</u> <u>0.8</u> (circle)			
Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)				
	1		4/								
	2		/								
	3		/								
	4										
	5										
	6										
	7										
	8										
	9										
	10										
	11										
	12				ě						
	13										
	14										
	15										

77	2016 Arriva	Se Program – Fall 2016 S	v Gamping	
Date <u>09 //28²¹/</u> Field Personnel	2016 Arriva	1 11me 10 10		
	Si	anatura Tolle	2000les)	
Emily Yeager		gnatures		
V	avon Pettley			
E DESCRIPTION	V			
Station Name	St DUMP S	sep s	tation Number <u>MDS (</u>	
Latitude On File L	ongitude On File			
Elevation On File	Datum N	AD 27 Photo Num	ber	
		y from hillsic		
avassu a	1)		
	acteristics (color, od	or, appearance): 106	ador, clear	
MPLE COLLECT		MAITAMA		
	Fiel	d Measurements		
Parameter	Sample 1	Sample 2	Sample 3	
Time	1045			
Water Temperature (°C)	7.8			
Specific Conductivity (μS/cm) @ 25° C	1636			
Conductivity (µS/cm)	1160			
TDS (g/L)				
Dissolved Oxygen (% sat.)	nA			
Dissolved Oxygen (mg/L)	nA			
рН	7.99			
ORP (mV)	50.4			
Turbidity (FTU)	14.5			
Air Temperature	(00 F			

Project P4 Production SE Idal	no Mine-Specific Se Program – Fall 20	016 SW Sampling
Date 09 / 28分1 20	016 Time 1040	_ Station Number MDSQQ
Completed by: E.Yeager <u>T</u>	A . Pettley Ostron Checked by	r: E.Yeager Tosborn
	Flow by Capture Method	
Measurement Number	Time (sec)	Volume (L)
	Flow by Meter	
R.E.W.	ft L.E.W. <u>ft</u> Total W	fidthft
	Number of Subsections Based on Stream	Width
Total Width (ft)	Number of Subsections	Subsection Width (ft)
<2	8-10	0.2 - 0.3
2 - 4	10 - 12	0.3 - 0.4
4 - 10	12 - 15	0.4 - 0.7
10 - 20	15 - 20 /	0.7 - 1.0
>20	20 - 25	1.0 - 2.0
	Donth of Volocity Magazuromant (Et. Balay S.	

Depth of Velocity Measurement (Ft. Below Surface)

Total Depth (TD): <2.0ft : 0.6TD (standard setting rod); >2.0ft : 0.2TD = (TD/2) and 0.8TD = (TDX2)

Distance from	Depth of <u>0,2</u>	Velocity Meas 0.6 0.8 (c	surement	Distance from	surement 0.8 (circle)		
Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)		Velocity (30 sec)
	1	/					
	2			<u></u>			
	3						
	4			***************************************			
	5	/					
	6						
	7					,	
	,8						
	9						
	/ 10						
	11						
	12						
	13						
	14						
	15						

Flow can't be measured, seeiping from area apx 30ft wide along hillside. Daylights in several locations.

Project P4 Production	on SE Idaho Mine-Specific	Se Program – Fall 2016 S	<i>N</i> Sampling	
·)	/ 2016 Arriva l	Time <u>1436</u>		
Field Personnel				
Emily Yeager		gnatures		
Tome Osborn	, Aavon Pettery			
SITE DESCRIPTION				
Station Name <u>?i†</u>	#2 upper dum	ip seep si	ation Number <u>MDSC</u>	37
Latitude On File	Longitude On File			
Elevation On File	Datum <u>N</u>	AD 27 Photo Num	ber	
Site & Stream Des	scription 1010 flo	N SEPTINA	from toe of	
ChiMP				
	aracteristics (color, odd	or, appearance): 八八〇	wish tint,	
low flow), muddy Po	019	r	
SAMPLE COLLE	CTION			
Collection Method	: 1L bottle, Horizontal-bottl	e, Swing-sampler, Other(). Up-stream / Across-s	tream
Sample ID:	MORROWI	MD5030-U.F	Sample Time: 1440	
	•			
	Field	d Measurements		
Parameter	Sample 1	Sample 2	Sample 3	
Time	1440			
Water Temperature (°C)	18.4			
Specific Conductivity (µS/cm) @ 25° C	5,6			
Conductivity (µS/cm)	5,0			
TDS (g/L)				
Dissolved Oxygen (% sat.)	nA			
Dissolved Oxygen (mg/L)	NA			
рН	8.49	,		
ORP (mV)	73.5			
Turbidity (FTU)	1.87			
Air Temperature	108			

Project P4 Production SE Idaho M	<u> 1 1 Iine-Specific Se Program – Fall</u>	016 SW Sampling
	Time <u>1430</u>	Station Number_MD503C
Completed by: E.Yeager T.Ost	Checked b Flow by Capture Method	y: E.Yeager T. gsbbrn
Measurement Number	Time (sec)	Volume (L)
,	Flow by Meter	
R.E.W. ft	L.E.W. <u>ft</u> Total V	Vidthft
Nı	mber of Subsections Based on Stream	Width
Total Width (ft)	Number of Subsections	Subsection Width (ft)
<2	8 - 10	0.2 - 0.3
2 - 4	10 - 12	0.3 - 0.4
4-10	12 - 15	0.4 - 0.7
10 - 20 >20	15 - 20 20 - 25	0.7 - 1.0

Depth of Velocity Measurement (Ft. Below Surface)

Total Depth (TD): <2.0ft : 0.6TD (standard setting rod); >2.0ft : 0.2TD = (TD/2) and 0.8TD = (TDX2)

Distance from	Depth of <u>0.2</u>	Velocity Mea <u>0.6 0.8</u> (c	surement	Distance from Reference	from <u>0.2 0.6 0.8</u> (d				
Reference	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	(or N/A)	Subsection No. (or N/A)		Velocity (30 sec)		
	1								
	2								
	3		/						
	4	JK.							
	5								
	6		·						
	7 /								
	8								
	9								
	10								
	11								
	12								
	13								
6	14								
	15				و خو د او	E. C.			

Flowing and of toe of hill side appx 3 ft wick. can't collect flow, seeping in several locations

Project P4 Pr	oduction SE Idaho Mine-	Specific Se Pro	gram – Fall 201	6 SW Sampling	
Date <u>09</u>	/ <u>.26</u> / 2016	Arrival Time	1212		
		0 !			
			es		
Tom€	osborn Axxvv Pettle	\		1.00	
SITE DESCR	IPTION				
Station Nam	e Henry Mine I	UMP SEEP	#3	Station Number MDS	634
	<u>File</u> Longitude <u>On</u>	*			
Elevation(On File D a	atum <u>NAD 27</u>	Photo N	lumber	
	n Description			1	
	•				
Surface Wat	er Characteristics (co	olor, odor, app	earance):		
SAMPLE CO	LLECTION			/	
Collection M	ethod: 1L bottle, Horizo	ntal-bottle, Swir	g-sampler, Oth	er(). Up-stream / Acros	s-stream
		~		Sample Time:	
-				-	
		Field Meas	surements		
Parameter	Sample 1		Sample 2	Sample 3	
Time		$\mathcal{A}/$			
Water Temperat	ure				
Specific Conduct (µS/cm) @ 25° C					
Conductivity (µS/cm)	,				
TDS (g/L)					
Dissolved Oxyge (% sat.)	∍n /				
Dissolved Oxyge (mg/L)	∍n /				
рН					
ORP (mV)					
Turbidity (FTU)		,			
Air Temperature					

09	1 -5	28 ,27/ 2	2016		Time _	1212		St	ation Nu	nber <u>M</u> T
leted	by: l	E.Yeager	T: Osb	m <u>A</u>	<u>Pettleu</u>	Checke	ed by: E	.Ye	ager T.Os	sborn
			ノ	Flo	w by Cai) oture Meth	<u>iod</u>		1	
Me	asurer	ment Number			Time	(sec)			Volum	e (L)
***		**********						/	/	
					Flow b	y Meter				
F	R.E.W	.			<i>I</i>					ft
			Num	ber of		s Based on S	ream Wid	th		
	lotal	Width (ft)		Number of Subsections 8 10				Subsection Width (ft) 0.2 - 0.3		
		2 - 4)\(\rangle	2-/12		0.3 - 0.4			
					7-15 20				0.4 - 0.7 0.7 - 1.0	
				- 25	1.0 - 2.0					
To	tal De	oth (TD): <2				ement (Ft. Be g rod); >2.0f			OTS 0 bnc /¢	= (TDY2)
Dista		Depth of		Measu	rement	Distance from		h of \	/elocity Meas 0.2 0.6	surement
fror Refere		Subsection			Velocity	Reference	Subsect		Subsection	Velocity
		No.	Depth	(ft)	(30 sec)	(or N/A)	No. (or N		Depth (ft)	(30 sec)
		1		7						
		2		/						
		3							***	
		4	/							
		5	/							
****		6	/							
		7 /	<u> </u>	-						
		8 /								
		9 /						\dashv		
		16						4		
		1.0								

Date 09 / 28 /				
Field Personnel	AI	irivai iiiii	3 100 1	
		Clanati	Iroc.	
	LOVAID DEHLEN		ires	NA
Tom Osborn)	6	
E DESCRIPTION				
Station Name }	Imaren E	princ	1	Station Number <u>MSG00</u>
Latitude On File L	ongitude <u>On Fil</u>	<u>e</u> `)	
Elevation On File	Datu	m NAD 27	Photo Nu	mber 8
Site & Stream Descr	iption			
Surface Water Chara	cteristics (color	r. odor. ar	pearance):	
ouriano traipi oriano	.0.00.000	, 000, 00	, poundinos/.	
		Field Mea	surements	
Parameter	Sample 1	N	Sample 2	Sample 3
Time			1	
Water Temperature (°C)				
Specific Conductivity (μS/cm) @ 25° C				$ \downarrow $
Conductivity (µS/cm)				
TDS (g/L)				
Dissolved Oxygen (% sat.)				
Dissolved Oxygen (mg/L)				
рН				
ORP (mV)				
Turbidity (FTU)				
Air Temperature				

09 /	28,27 :	2016	Time _	1504	s	tation Nur	nber_M	
pleted by:	E.Yeager			Checke	ed by: E.Ye	eager T.Os	born	
Measure	ment Number		Time	e (sec)		Volum	e (L)	
			Flow b	y Meter				
R.E.W	1	ft L.E.	.w	<u>ft</u> To	tal Width		ft	
	1	Number o	f Subsection	s Based on S	tream Width			
Tota	Width (ft)			Subsections		Subsection		
	<2 2 - 4			- 10) - 12		0.2 - 0.3 -		
	4 - 10	4	/ No	- 15		0.4 -	0.7	
	0 - 20 >20			20		0.7 - 1.0 -		
Distance from Reference		Velocity Meas 0.6 0.8 (c	0.8 (circle) from			Depth of Velocity Measurement 0.2 0.6 0.8 (circle) section Subsection Velocity		
	No.	Depth (ft)	(30 sec)	(or N/A)	No. (or N/A)	Depth (ft)	(30 sec)	
	2			X				
	3				/			
	4							
	5							
	6							
	7							
	8							
	9							
	10		/				1	
	11.							
	12		4				1	
	13							
	14							

Project P4 Production SE Idaho Mine-Specific Se Program - Fall 2016 SW Sampling
Date 09 / 28 / 2016 Arrival Time 17 17 10
Emily Yeager Signatures
Tom Osborn Aavon Pettley
SITE DESCRIPTION
Station Name Blackfoot Rivey Below Ballard Creek Station NumberMSTO19
Latitude On File Longitude On File
Elevation On File Datum NAD 27 Photo Number 12
Site & Stream Description Fyre Flowing, gravel vottom
Surface Water Characteristics (color, odor, appearance): NO COLOY, NO COLOY
SAMPLE COLLECTION
Collection Method: 1L bottle, Horizontal-bottle, Swing-sampler, Other(). Up-stream / Across-stream
Sample ID: 10095101957019-U,F +DUP Sample Time: 1720
Field Measurements

	Fiel	d Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	1720	1720	
Water Temperature (°C)	14.7	14.8	
Specific Conductivity (μS/cm) @ 25° C	331.0	330.4	
Conductivity (µS/cm)	267.8	267.5	
TDS (g/L)			
Dissolved Oxygen (% sat.)	NA	nA	
Dissolved Oxygen (mg/L)	nA.	NA	
рН	9.31	9.31	
ORP (mV)	58.2	58.2	
Turbidity (FTU)	3.14	3.14	
Air Temperature	70	70	

te_	09 12	28 / 2	2016		Time _	1710	s	tation Nu	mber $M5$	<u>7 C</u>
mp	leted by:	E.Yeager	Γ.Osbo	.A.º orn	Pettley	Checke	ed by: E.Ye	eager T.O	porn APCH	lei
			/)	Flo	w by Cap	ture Meth	<u>iod</u>			•
	Measure	ement Number			Time	(sec)		Volum	e (L)]
								<u> </u>		-
								/		
<u> </u>			· · · · · · · · · · · · · · · · · · ·		Flow b	y Meter				켈
	R.E.V	v	ft	L.E.V			tal Width_/		ft	
			Nun	iber of	Subsections	Based on St	tream Wighth		·····	7
	Tota	al Width (ft)			Number of	Subsections	X	Subsection	Width (ft)	
		<2 2 - 4				- 10 - 12		0,2 -		4
		4-10			12	-15 /		0.3 - 0.4 0.4 - 0.7		
		10 - 20 >20				- 20		0.7 - 1.0		
		720	Donth	20 - 25 of Velocity Measurement (Ft. Below Su			levi Printere)	1.0 - 2.0		
	Total D	epth (TD): <2.				, .		/2) and 0.8TD	= (TDX2)	
	Distance from	Depth of <u>0.2</u>	Velocity <u>0.6</u> <u>0</u>			Distance from Reference	Depth of	Velocity Mea 0.2 0.6	surement 0.8 (circle)	
	Reference	Subsection No.	Subsect Depth		Velocity (30 sec)	(or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)	
		1								
		2		4						
	Ħ	1 2		/			İ			
		3								
		4			·					
***************************************		4 5 6 7		***************************************						
		4 5 6 7								
		4 5 6 7								
		4 5 6 7 8 9								
		4 5 6 7 8 9 10								
***************************************		4 5 6 7 8 9 10								

be verified on line. Staff gauge 1.90

	Project P4 Product	<u>ion SE Idaho Mine-Specific</u>	Se Program – Fall 2016	SW Sampling	
	·	2016 Arriva	al Time <u>1745</u>		
	Field Personnel				
		er S	ignatures		
	Tom Dsborn	Aavon Pettley			
SI	TE DESCRIPTI お	ackfort River	below state		J./
	Station Name	Land Cres	el-	Station Number <u>MSTO</u>	<u>. L</u>
	<u></u> -	Longitude On File		_	
	Elevation On Fil	<u>e</u> Datum <u>N</u>	NAD 27 Photo Nu	mber <u>13</u>	
	Site & Stream De	scription <u>ADDX</u>	2.0' deed	free flowing	
	Silta br	Arna Mith	110 cre toution)	,
	Surface Water Ch	paracteristics (color, or	lor appearance):	bear, no odor	
	Surface Water Of	ialacteristics (color, oc	ior, appearance).		
SA	MPLE COLLE	CTION		N (a	
			tle. Swing-sampler. Other	CE MMEYYEV (). Up-stream / Across-stre	an
				Sample Time:\755	
	Sample ib	JULY OF COLOR		Oumple time.	
		Fie	ld Measurements		
	Parameter	Sample 1	Sample 2	Sample 3	
	Parameter Time	Sample 1	Sample 2	Sample 3	
	Time Water Temperature	Sample 1	Sample 2	Sample 3	
	Time	1755	Sample 2	Sample 3	
	Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm)	1755	Sample 2	Sample 3	
	Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity	1755	Sample 2	Sample 3	
	Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS	1755	Sample 2	Sample 3	
	Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen	1755	Sample 2	Sample 3	
	Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen	1755	Sample 2	Sample 3	
	Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L)	1755 14.0 314.6 249.9 ———————————————————————————————————	Sample 2	Sample 3	
	Time Water Temperature (°C) Specific Conductivity (µS/cm) @ 25° C Conductivity (µS/cm) TDS (g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L) pH ORP	1755	Sample 2	Sample 3	

19 / F	Ί,	<u>ано Міл</u> 2016	e-Specific Se Time			<u>V Sampling</u> Station Nur	mber 1009	
<i>J 1</i>	2	A.Pet	Hey.				Settory	
ted by:	E.Yeager ⁻	T.Osbo	rn_ <u>\</u>	Checke	ed by: E.Y	eager T.Oa	born 💍	
			Flow by Ca	apture Metl	<u>nod</u>	,		
Measure	ment Number		Time (sec)			Volum	e (L)	
							/_	
			***************************************				-/-	
			<u>Flow</u>	by Meter				
R.E.W	/	ft_	L.E.W	<u>ft</u> To	tal Width_		ft	
Toto	I Midth (#1)	Num	ber of Subsectio			<u> </u>	NAV141- (64)	
TUEA	l Width (ft) <2			of Subsections 8 - 10		Subsection Width (ft) 0.2 - 0.3		
	2 - 4 4 - 10			0 - 12 2 - 15	-/ $-$	0.3 - 0.4 0.4 - 0.7		
	10 - 20		1	5 - 20		0.7 - 1.0		
	>20	Depth o	of Velocity Meası	20 - 25 rement (Ft. Re	olow Surface)	1.0 - 2.0		
Total De	epth (TD): <2.		D (standard setti			0/2) and 0.8TD	= (TDX2)	
Distance from	Depth of <u>0.2</u>		Measurement 8 (circle)	(circle) from		Velocity Meas 0.2 0.6	surement 0.8 (circle)	
Reference	Subsection No.	Subsect Depth		Reference (or N/A)	Subsection No. (or N/A)		Velocity (30 sec)	
	1							
	2							
	3							
	4							
	5		/					
	7							
	8 /	/						
	9							
	10							
	11							
	. /	I	1	I]			
	12							
	12 13							

Use Flow from MSTOIG USGS Stream gauge Station.

Project P4 Product	<u>ion SE Idaho Mine-Specific</u>	Se Program – Fall 2016 S	W Sampling
Date <u>09 / 28</u>	/ 2016 A rriva	I Time <u>1225</u>	
Field Personnel			
Emily Yeage	si	gnatures	
Jom Osbor	- A Pettey	Name and Address of the Address of t	
SITE DESCRIPTI		(1997#	· ·
Station Name <u></u> ∖ <u></u> ∕∨∕	neclicately below	Henry Mine si	tation Number MST HU
	Longitude On File	V	
Elevation On Fil	e Datum N	AD 27 Photo Num	ber
Site & Stream Des	scription CHAY	Free Flowin	ra gravel
<u>laoho</u>	W		J J
Surface Water Ch	aracteristics (color, od	or, appearance):\	ear , no odor
AMPLE COLLE	CTION		
Collection Method	d 1L bottle, Horizontal-bott	le, Swing-sampler, Other() (Up-stream / Across-stream
Sample ID:\	OTEMWIEROR	44-U,F	Sample Time: 1245
	Fiel	d Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	1245		
Water Temperature (°C)	14.5		
Specific Conductivity (µS/cm) @ 25° C	751		
Conductivity (µS/cm)	400		
TDS (g/L)			
Dissolved Oxygen (% sat.)	v/A		
Dissolved Oxygen (mg/L)	NA		
рН	9.16		
ORP (mV)	41.9	 _	
Turbidity (FTU)	1.03		
Air Temperature	6 le		

09 / 22 /	2016	_ Time _	1240		Station Num	ber <u>MST</u>
ر pleted by: E.Yeager	T. A. P.	ettley	Checked	by: E.`	∕eager T.Osb	oorn
	<u>E</u>	low by Cap	ture Metho	þ		
Measurement Numbe	er .	Time	(sec)		Volume	(L)
					•	

		Flow by	/ Meter		1	
R.E.W. _ ○ 。 ○	<u>ft</u> L.			Width_	11.3	ft
R.E.W \ ○ - [©]			<u>ft</u> Total			ft
R.E.W. 10 °		E.W. O . Subsections	<u>ft</u> Total			
Total Width (ft)		E.W. O . O . O . O . O . O . O . O . O .	ft Total Based on Stres Subsections		Subsection V 0.2 - 0	Vidth (ft)
Total Width (ft) <2 2 - 4		E.W. O s Constitution of Subsections Number of 8 - 10	ft Total Based on Strea Subsections 10 -12		Subsection V 0.2 - 0 0.3 - 0	Vidth (ft) .3 .4
Total Width (ft) <2 2 - 4 4 - 10		of Subsections Number of 8 - 10 12	ft Total Based on Stree Subsections 10 - 12 - 15		Subsection V 0.2 - 0 0.3 - 0 0.4 - 0	Nidth (ft) .3 .4
Total Width (ft) <2 2 - 4		e of Subsections Number of 8 - 10 12 15	ft Total Based on Strea Subsections 10 -12		Subsection V 0.2 - 0 0.3 - 0	Nidth (ft) .3 .4 .7

from Reference Subsection Subsection Velocity Reference Subsection Subsection Velocity No. Depth (ft) (30 sec) (or N/A) No. (or N/A) Depth (ft) (30 sec) 1 :02 0.85 10 0.00 2 0014 3 .8 18 0,28 0.9 0.6 4 9.8 19 0.8 0.65 0.02 -0.02 5 0.65 20 0.17 0.0 -0.02 6 3 0.29 0.65 10.8 21 7 3.8 0.75 5.06 8 0.29 0.75 9 4.8 0.64 0.0 10 0.05 11 0.8 0.80 12 1.24 0.9 13 0.95 0.64 14 15 0.93

LEW

Project P4 Producti	ion SE Idaho Mine-Specific S	<u> Se Program – Fall 2016 S</u>	SW Sampling
Data 00 / 29	/ 2016 Arrival	Time 1221	
Field Personnel	7 2010 Allivar	Time	
	r Sig	ınatııres	
Tom/Penorn	A. Pettley		
ITE DESCRIPTI	ON		
4.; 1	to Blackfrot Rive	y above	D (1)(
Station Name	Henry Cree	<u>k</u> s	tation Number <u>MSTO49</u>
	Longitude On File		lo
	e Datum <u>NA</u>		
Site & Stream Des	scription <u>tree</u> to	wing, Silty	bottom with
	regetation of		
Surface Water Ch	aracteristics (color, odo	r, appearance):	llawish color,
<u> </u>			
AMPLE COLLE			
). Up-stream / Across-strea
Sample ID:	10095WMSTO	15-U, t	Sample Time: <u>1340</u>
	Field	l Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	1340		
Water Temperature	17.2		
Specific Conductivity (μS/cm) @ 25° C	7107		
Conductivity (μS/cm)	652		
TDS (g/L)			
Dissolved Oxygen (% sat.)	rA		
Dissolved Oxygen (mg/L)	nA		•
рН	9,21		
ORP (mV)	54.2		
Turbidity (FTU)	1,55		
<u> </u>			

	ct <u>P4 Produ</u> 09 / 0			e-ope		_				
			<u>2016</u> ۸ کامی	— 101	ı ime _				mber <u>M</u> E	210
omp	leted by:	E.Yeager	77 (9, 11 T.Osbet	<u></u>		Checke	d by: E.Ye	$A.\widetilde{Y}$ eager T. O	sborn S	
	-	_	Game					U =		
				FIO'	w by Car	oture Meth	lod ,			
	Measure	ment Numbe	r		Time	(sec)		Volum	e (L)	
						<u></u>				
<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>				7			<u> </u>	`		<u>_</u>
	٥	_				y Meter				
11.1	R.E.W	1. <u>27.7</u>	<u>ft</u>	L.E.V	v. 16.1	<u>ft</u> To	tal Width_	<u>27.8</u>	ft	
			Numl	ber of	Subsection	s Based on S	ream Width			
	Tota	Total Width (ft)				Subsections - 10		Subsection 0.2 -		
		2 - 4			10	- 12		0.3 -	0.4	
-		4 - 10 10 - 20				- 15 - 20		0.4 - 0.7 -		
		>20		20 - 25				1.0 - 2.0		
	Total Do	onth /TD\: <2			-	ement (Ft. Be	•	0/2) and 0.8TD	- (TDV0)	
	TOTAL		f Velocity			Distance	-			
	Distance from	0.2		<u>3</u> (cire		from Reference	Depth of Velocity Measurement <u>0.2</u> <u>0.6</u> <u>0.8</u> (circle)			
N	Reference	Subsection No.	Subsect Depth (Velocity (30 sec)	(or N/A)	Subsection No. (or N/A)		Velocity (30 sec)	
	16.1	1	0.2	0 -	-0.04	26.6	112	0.90	0.13	
	16.8	2	0.79		5,26	27.3	17	0.90	0.08	
	17.5	3	0.8		-0,08	27.7	18	0.70	0.00	251
	18.2	4		ı		<i>A</i> 11 1	10	0.10	0.1 1	REI
	18.9	5	1.10		6.62					
		6	1,20		20.C					
	19.6	7	1.20		<u> </u>					
	20-3	8	1.15		0.11					
	21.0		1015	2 (5.66					
	21.7	9	1.75	5	0.18					
	22.4	10	1	1	0.10					
	23.1	11	I .		03.0					
	23.8	12			2.01					
8	-	13	1	1						
	245	13	1 1 火	$\neg \cap \mid \mid \mid$	7 Clin					
	24.5 25.2	14			5,4 <u>6</u> 5,33	·				

Project P4 Production SE Idano Mine-Specific Se Program – Pail 2016 SW Sampling
Date 09 1,28 / 2016 Arrival Time 1028
Field Personnel
Emily Yeager Signatures
Tom Ostorn ACVOV PCHIEU
SITE DESCRIPTION
Station Name Short Creek Joelan Ballard Mive Station Number MST069
Latitude On File Longitude On File
Elevation On File Datum NAD 27 Photo Number
Site & Stream Description 1/274 1010 Flow, tall grass
choking out stream
Surface Water Characteristics (color, odor, appearance): CHOV, LOW FLOW
SAMPLE COLLECTION
Collection Method: L bottle, Horizontal-bottle, Swing-sampler, Other (). Up-stream / Across-stream
Sample ID: 1109 SWMST 0109 - 11, F + WS WSD Sample Time: 1640

Field Measurements							
Parameter	Sample 1	Sample 2	Sample 3				
Time	11040	11040	11040				
Water Temperature (°C)	12.8	12.7	12.Le				
Specific Conductivity (µS/cm) @ 25° C	1636	1643	1645				
Conductivity (μS/cm)	1253	1257	1257				
TDS (g/L)							
Dissolved Oxygen (% sat.)	$\wedge A$	MA	NA				
Dissolved Oxygen (mg/L)	n.A	NA	n:A				
рН	8.81	8.69	8.70				
ORP (mV)	(QD, 9	63.5	62.4				
Turbidity (FTU)	8.51	8.50	8.51				
Air Temperature (°C)	73	73	73				

eted by:				, mme_	1029	S	tation Nur	mber <u> <i>WS</i></u>
eted by:		AR	Hew	¶3≬∵;	•			A DOWA
	E.Yeager	T.Oabo	rn	<u> </u>	Checke	ed by: E.Ye	eager T.Os	forn
	* *		Flo		oture Meth			_
			1.10	w by Ca	Juie Meti	<u>10u</u>		
Measur	ement Numbe	r		Tíme	e (sec)		Volum	e (L)
				•				
			-					
								/
			****			<u> </u>		<u>/</u>
				Flow b	<u>y Meter</u>			
R.E.	W	ft	L.E.V	V	<u>ft</u> To	tal Width_		ft
		Nun	ber of	Subsection	s Based on S	tream Width	/	
Tot	al Width (ft)				Subsections		Subsection	Width (ft)
-	<2 2 - 4				- 10) - 12	_/_	0.2 - 0.3 -	
	4 - 10			12	! - 15		0.4 -	0.7
,	10 - 20 >20		15 - 20 20 - 25				0.7 - 1.0 -	
					ement (Ft, Be	•		
Total E	Depth (TD): <2				/			
Distance	Depth o	f Velocity <u>0.6 0</u>	Measu <u>.8</u> (cir		Distance from	Depth of	Velocity Meas 0.2 0.6	surement 0.8 (circle)
≒,from Reference	Subsection	_		Velocity	Reference	Subsection		Velocity
	No.	Depth	(ft)	(30 sec)	(or N/A)	No. (or N/A)	Depth (ft)	(30 sec)
	1							
	2			\mathcal{N}				
	3		5					
	4		$\overline{}$					
	5		/+					
	6	1						
)- 	7	 						
	8	 / 	_					
	9 /	<u>/</u>						
	10							
	/11							
	12							
	13							•
	14							
/	15							
	verv te ch	1		, f	,1 -			

Project P4 Production	on SE Idaho Mine-Specif	<u>fic Se Program – Fall 2016 SV</u>	/ Sampling
Date 09 / 28	/ 2016 Arriv	/al Time <u>\\35</u>	
Field Personnel)		
Emily Yeager		Signatures	
-Tom Osborn	- Aaron Rettley	fresh	2/2
E DESCRIPTION			
Station Name We	at Poud Creek hea	dwaters west Sta	ation Number <u>MST 144</u>
	Longitude On File		a .
Elevation On File	Datum	NAD 27 Photo Numb	ber
Site & Stream Des	cription		
	/	1	
Surface Water Cha	aracteristics (color, o	odor, appearance):	7
MPLE COLLEC	CTION		
IAII- FF COFFF	J11014		
Collection Method	: 1L bottle, Horizontal-bo	ottle, Swing-sampler, Other(). Up-stream / Across-str
			Sample Time:
Sample ID:			Sample Time
	Fi	eld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time			
Water Temperature (°C)			1
Specific Conductivity (μS/cm) @ 25° C		*	
Conductivity (µS/cm)			
TDS (g/L)			
6.000			
(g/L) Dissolved Oxygen			
(g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen			
(g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L)			
(g/L) Dissolved Oxygen (% sat.) Dissolved Oxygen (mg/L) pH ORP			

9 / 28 / 2016	Time\\35	2016 SW Sampling MST
pleted by: E.Yeager T.Osbor	hev. Checked b	y: E.Yeager T.Osborn
	Flow by Capture Method	
	1 1011 Dy Supture Metricu	
Measurement Number	Time (sec)	Volume (L)

1	Number of Subsections Based on Stream	Width
Total Width (ft)	Number of Subsections	Subsection Width (ft)
<2	8-10	0.2 - 0.3
2 4	10-12	0.3 - 0.4
4 - 10	12 15	0.4 - 0.7
10 - 20	15 - 20	0.7 - 1.0
>20	20 - 25	1.0 - 2.0

Depth of Velocity Measurement (Ft. Below Surface)

Total Depth (TD): <2.0ft: 0.6TD (standard setting rod); >2.0ft: 0.2TD = (TD/2) and 0.8TD = (TDX2)

Distance from Reference	Depth of Velocity Measurement 0.2 0.6 0.8 (circle)			Distance from	Depth of Velocity Measurement <u>0.2</u> <u>0.6</u> <u>0.8</u> (circle)		
	Subsection No.	Subsection Depth (ft)	Velocity (30 sec)	Reference (or N/A)	Subsection No. (or N/A)	Subsection Depth (ft)	Velocity (30 sec)
	1						
	2						
	3					1	
	4			7			
	5					1	
	6						1
	7						1
	8						1
	9						
	10						
	11						
	12						
	13						
	14						
	15						

Project P4 Producti	on SE Idaho Mine-Specific	s Se Program – Fall 2016	SW Sampling	
ධි <u>]</u> Date <u>09 / 26</u>	/ 2016 Arriv a	al Time <u>1540</u>		
Field Personnel	•			
Emily Yeage	<u>r</u> S	ignatures	th distance.	
*	Acron Pettleu			
SITE DESCRIPTI) MBWI	3)	
Station Name <u>\(\)</u>	W Pond nex	+ to 1000	Station Number <u>MWPC</u>	NĪ
	Longitude On File			
	e Datum <u>N</u>			
Site & Stream Des	scription <u>COHIO</u>	, pond 3	oft x aoft	
no flou	NO W OV	out, stac	ghant water	
Surface Water Ch	aracteristics (color, oc	lor, appearance):		
	CTION			
SAMPLE COLLE				
			(). Up-stream / Across-str	
Sample ID:	NWPO	nd-U,F	Sample Time: 1545	<u> </u>
	Fie	ld Measurements		1
Parameter	Sample 1	Sample 2	Sample 3	
Time	1545			
Water Temperature (°C)	23.9			
Specific Conductivity (μS/cm) @ 25° C	4.5			
Conductivity (µS/cm)	4.3			
TDS (g/L)				
Dissolved Oxygen (% sat.)	- NA			
Dissolved Oxygen (mg/L)	NA			
рН	9.62			
ORP (mV)	65.2			
Turbidity (FTU)	149			
Air Temperature	73			

SURFACE WATER FLOW MEASUREMENT FORM

/	2010	_ Time		_ Station No	umber
eted by: E.Yeag	ger T.Osborn	с	hecked by	r: E.Yeager T.C)sborn
	<u>1</u>	Flow by Capture	e Method		
Measurement Nur	mber	Time (sec		Volu	me (L)
ž					
		Flow by Me	eter		**************************************
R.E.W	<u>ft</u> L.	E.W. <u>ft</u>		idth	ft
R.E.W			Total W		ft
R.E.W	Numbe	E.Wft	Total W	Width	
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SURFACE WATER SAMPLE COLLECTION FORM

Project P4 Product	<u>ion SE Idaho Mine-Specifi</u>	Se Program – Fall 2016 :	SW Sampling
,	/ 2016 Arriva	al Time <u> 1000</u>	
Field Personnel			
Emily Yeage	er S	ignatures	
Tomlesborn	· Aavon Pettley		And the second s
SITE DESCRIPTI)		
Station Name	SE Pond	noay mmwo32	Station Number #\$ SEP()
Latitude On File	Longitude On File		
Elevation On Fil	<u>e</u> Datum <u>1</u>	NAD 27 Photo Nui	mber
Site & Stream De	scription	pond, no	Water Flowing
		\ .	
SAMPLE COLLE	CTION		
Collection Method	dr 1L bottle. Hørizontal-bot	ttle, Swing-sampler, Other(). Up-stream / Across-stream
			Sample Time: 1015
	Fie	ld Measurements	
Parameter	Sample 1	Sample 2	Sample 3
Time	1015		
Water Temperature (°C)	23.0		
Specific Conductivity (µS/cm) @ 25° C	163.9		
Conductivity (µS/cm)	157.3		
TDS (g/L)			
Dissolved Oxygen (% sat.)	$-n_A$		
Dissolved Oxygen (mg/L)	nΑ		
рН	9.96		
ORP (mV)	60.610 CO		
Turbidity (FTU)	517		
Air Temperature	73		

SURFACE WATER FLOW MEASUREMENT FORM

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Pace Analytical

Pace Project No./ Lab I.D. Samples Intact (V/V) DRINKING WATER SAMPLE CONDITIONS F-ALL-Q-020rev.08, 12-Oct-2007 OTHER (N/A) Sealed Coole Custody ŏ Ice (Y/N) Received on GROUND WATER Residual Chlorine (Y/N) O ni qmaT Page: RCRA REGULATORY AGENCY TIME Requested Analysis Filtered (Y/N) Petters
Date Signed
(MM/DDYY): CA | DT | | C NPDES STATE: Site Location DATE UST ACCEPTED BY / AFFILIATION ozzia ZMOORE WASTON T L teaT sisylanA N/A Other Methanol Na₂S₂O₃ Preservatives NaOH MON HCI nvoice Information: Company Name: H_O³ Pace Quote Reference: Pace Project Manager: Pace Proille #: PSSP4 8 Section C Unpreserved TIME Address: 30 ig to late charges of 1.5% per month for any inv 9 Ø) 18 # OF CONTAINERS SAMPLER NAME AND SIGNATURE SIGNATURE of SAMPLER PRINT Name of SAMPLER: SAMPLE TEMP AT COLLECTION 9/188/16 20110 DATE (SIO) SHOI 320 340 140 4.50 なる D.F.D CHALL BLOW HELIO ISA 5601 510 TIME COMPOSITE END/GRAB 9/11/11 9/27/16 DATE E COLLECTED RELINQUISHED BY / AFFILIATION Wager (MUNH G 9/10/16 10/15 TIME Project Name: MANNES ANTE CONJ 8888 COMPOSITE DATE Section B Required Project Information: SAMPLE TYPE S 5 \$ (GJGRAB C=COMP) MD urchase Order No. SHIPPING: SPECIAL: HANDLING: TOTAL: Project Number: **AMATRIX CODE** Report To: Copy To: 1009SWMDS025-MM Valid Matrix Codes DRINKING WATER WY
WASTE WASTE WAW
PRODUCT P
SOIL/SOLID SL SE WP OF TS 00.0 6095WMDS025-14 T-PHOTOMINICPOST ROOK NIMOTOCH - IN 209SINIMSTONS-LEOGINIMIDEO 30-14 L 2095WIMSTOUS - RU Address OF F. C. SHOWNOOD PRU 14095WWD5030-8 10 F WIPE AIR OTHER TISSUE 70000 D COM Date: 28Sep16 Wgt: 50.45 LBS Svos: STANDARD OVERNIGHT TRCK: 9723 6785 8271 F. POWID-1 - DUDDING-SFPOND-F 5 ADDITIONAL COMMENTS (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE SAMPLE ID Fax: STO OF Requested Due Date/TAT: Required Client Information 12300 Section A Required Client Information: Ref: Monsanto CERCLA Dep: Section D りあ Email To: 12 9 = 7 e œ 6 # WHI

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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7	できる日これの						Address:					L	NPDES	Γ GRC	GROUND WATER	TER	DRINKIN	DRINKING WATER
nail To:	Email To:	Purchase Order No.:					Pace Quote Reference:					L	UST	☐ RCRA	Į,	L	OTHER	
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equestec	Requested Due Date/TAT:	Project Number:	PYCIO				Pace Profile #:	12					STATE:					
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O &	Section D Valid Matrix Codes Required Client Information MATRIX COI	(jie)		COLLECTED	Œ			Preser	Preservatives	↑ N/A		0.						
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Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any it

F-ALL-Q-020rev.08, 12-Oct-2007

Monsonto E. Yeaser 9/27/16 FALL Zolle A. Virthy Sunny 270 F 1321 Arrived at MSTO45 H20 °C 17.2 OPP 54.2 SCUSICM 025°C 767 TUM 1.55 condustan 652 Air T°F 68 PH 9.21 1340 Sample time 1430 Amived at MDS030 1440 Sample time H20 °C 184 SC US CM 225°C 5.6 CONDUSTON 5.0 PH 8.49 ORP 73.5 MV TUVO 1.87 Air T = 68 1504 Arrive a MOGOOH - DRU 1540 nw Pond in Ballard, Recon Sample 1545 Sample time H20 °C 23.9 Scusjon = 25°C 4.5 TUY6 149 condination 4.3 Air T 773 PH 9.62 ORP 65.2MV

9/27/16 1600 Arrive SEPOND in Balland, Recon Sample 1015 sample time H20°C 23 SC Major 250 163.9 condusion 157.3 pH 9.94 ORPMV GO.6 Turb 517 AIVT°F 73 1028 Arrive 2 MSTOG9 1040 Sample time + DUAP MS/MSP H20°C 12.8 12.7 12.6 SCUS CM 225°C 1636 1643 1645 cond us/cm 1253 1257 1257 PH 8.81 8.69 8.70 ORP MV 60.9 63.5 624 TUYD 8.50 8.51 Airt of 73 73 73 1710 MEST 019 arrive + DUP 1720 sample time DRPMV 58.3.2 Scuplan 25°C 331.0 -Condusian 267.5 PH 9.31 9.31 H20°C 41.7 14.8 TWO 3.14 3.14 AirT of 70 70

09/27/16 1745 Arrive M5T020 Gate code 0110 420°C 14'0 Sc ublan 225°C 314.6 condusion 249.9 PH 9.26 0'RP MV 61.3 TUYO 14.7 154.7 AirTOF 73 1830 Sign out at mine office -

APPENDIX B - 2016 SURFACE WATER AND GROUNDWATER ANALYTICAL DATA

B-1 2016 Surface Water and Groundwater Analyte List

B-2 Applicable or Relevant and Appropriate Requirements (ARARs)

B-3 2016 Surface Water Analytical Data

B-4 2016 Groundwater Analytical Data



TABLE B-1 2016 SURFACE WATER AND GROUNDWATER **ANALYTE LIST**

Category	Fraction	Analytes (Analytical Method)
	Sur	face Water
Streams, Seeps, and Springs,	Unfiltered Filtered ^a Filtered Unfiltered Unfiltered	Se (EPA 6020A) Cd, Se, Ca, Mg (EPA 6020A) SO ₄ (EPA 300.0) TDS (SM2540C) Field Parameters ^b
	Gro	oundwater
Monitoring Wells and Direct Push Borehole Wells ^c	Unfiltered ^d Filtered Filtered Unfiltered Unfiltered	Cd, Mn, Se (EPA 6020A) Se (EPA 6020A) SO ₄ (EPA 300.0) TDS (SM2540c) Field Parameters ^b

Notes:

^bField Parameters are listed on Table 3 and Table 5 of the 2014 Long-Term Surface Water and Groundwater Memo.

^cBorehole Monitoring Wells (direct push) are differentiated from "regular or standard" monitoring wells based on their methods and means of completion. In general, they have a smaller diameter and a shorter pre-packed screened interval than the regular monitoring wells.

^dDirect-push monitoring wells may be sampled for dissolved or dissolved and total fractions depending on turbidity (see 2010 Groundwater SAP).

Ca - Calcium

Cd - Cadmium

Mg – Magnesium Mn – Manganese

Se - Selenium

SO₄ - Sulfate

TDS - Total Dissolved Solids

^aHardness is calculated on filtered fractions of Ca and Mg

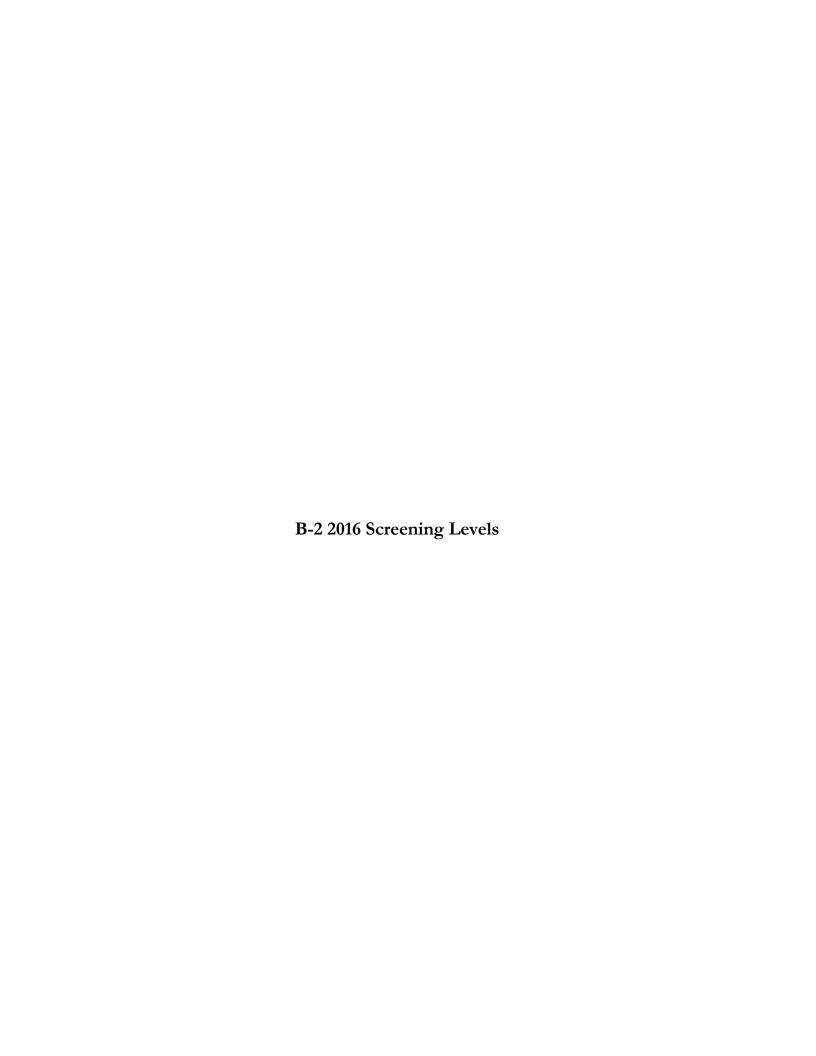


		TABLE	B-:	2		
		SCREENING				
Analyte	GW Levels (mg/l)	Source ^a		SW Levels (mg/l)	Source ^{b, c}	Notes
Aluminum	0.2	Secondary MCL		0.087	NRWQC	aquatic life CCC
Antimony	0.006	Primary MCL		0.0056	IDAPA 58.01.02	human health w&o
Arsenic	0.01	Primary MCL		0.0062	USEPA ^d	human health o
Barium	2	Primary MCL				
Beryllium	0.004	Primary MCL				
Boron		•				
Cadmium	0.005	Primary MCL		0.0006	IDAPA 58.01.02	aquatic life CCC
Chloride	250	Secondary MCL				
Chromium	0.1	Primary MCL		0.011	IDAPA 58.01.02	aquatic life CCC
Cobalt						
Copper	1.3	Primary MCL		0.011	IDAPA 58.01.02	aquatic life CCC
Fluoride	4	Primary MCL				
Iron	0.3	Secondary MCL		0.3	NRWQC	organoleptic effects
Lead	0.015	Primary MCL		0.0025	IDAPA 58.01.02	aquatic life CCC
Manganese	0.05	Secondary MCL		0.05	NRWQC	human health
Mercury	0.002	Primary MCL		0.00077	NRWQC	aquatic life CCC
Molybdenum						
Nickel				0.052	IDAPA 58.01.02	aquatic life CCC
Nitrate	10	Primary MCL				
Nitrite	1	Primary MCL				
Selenium	0.05	Primary MCL		0.0031	NRWQC	aquatic life CCC
Silver	0.1	Secondary MCL		0.0034	IDAPA 58.01.02	aquatic life CCC
Sulfate	250	Secondary MCL				
TDS	500	Secondary MCL				
Thallium	0.002	Primary MCL		0.00024	IDAPA 58.01.02	human health w&o
Uranium	0.03	Primary MCL				
Vanadium						
Zinc	5	Secondary MCL	Ш	0.12	IDAPA 58.01.02	aquatic life CCC
pН	6.5-8.5	Secondary MCL		6.5-9	NRWQC	aquatic life CCC

Notes for Screening Levels

CCC chronic criteria GW groundwater

MCL maximum contamination limit

mg/L milligram per liter SW surface water

^a USEPA primary and secondary Maximum Contaminant Level (MCL), National Primary Drinking Water Regulations

^b State of Idaho Surface Water Quality for Aquatic Life (IDAPA 58.01.02); Chronic Criteria (CCC) or Water & Organisms (IDEQ, 2014)

^c National Recommended Water Quality Criteria (USEPA, 2015); Freshwater Standards for Chronic Criteria (CCC)

^d USEPA letter to IDEQ dated September 15, 2016 Re: EPA Dissapproval of Idaho's Arsenic Human Health Water Quality Criteria



TABLE B-3
SUMMARY OF 2016 SURFACE WATER RESULTS
P4 RI/FS

(Page 1 of 17)

Lo Analyte (Units)	cation Identification Location Type Date Collected	MDS Sec 5/10/	ер	MDS03 Se 5/10/	ер	MDS03 Se 5/10/	ер
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	< 0.00008		< 0.00008		< 0.00008	
Calcium		156 D		164 D		160 D	
Magnesium		17.8		18.3		18.05	
Selenium	0.0031 mg/L	0.772 D	0.756 D	0.78 D	0.772 D	0.776 D	0.764 D
Chemistry Parameters (mg/I	L)						
Sulfate (as SO ₄)		141 DJ-		141 DJ-		141 DJ-	
Total dissolved solids			578		565		571.5

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

⁻⁻ Not scheduled.

TABLE B-3
SUMMARY OF 2016 SURFACE WATER RESULTS

P4 RI/FS (Page 2 of 17)

Lo Analyte (Units)	cation Identification Location Type Date Collected	MDS Sec 9/27/2	ep	MSG Spri 5/10/2	ng	MSG Spri 5/10/2	ing
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	<.00008		0.00004 FJ		< 0.00008	
Calcium		151 D		77 D		88.8 D	
Magnesium		17.6		24.5 D		22.6 D	
Selenium	0.0031 mg/L	1.02 D	1.01 DJ	0.0209	0.0217	0.0052	0.0057
Chemistry Parameters (mg/	L)						
Sulfate (as SO ₄)		169 D		37.6 J-		29.9 J-	
Total dissolved solids			604		301		317

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

⁻⁻ Not scheduled.

TABLE B-3

(Page 3 of 17)

Lo Analyte (Units)	Cation Identification Location Type Date Collected	MSG Spri 5/11/2	ng	MSG Spr 5/11/2	ing	MST0 Strea 5/9/20	am
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	<u>Total</u>	Dissolved	Total
Cadmium	0.0006 mg/L	0.00002 FJ		< 0.00008		0.000048 FJ	
Calcium	· ·	244 D		65.3 D		61.5 D	
Magnesium		43.3 D		17.8		10.8	
Selenium	0.0031 mg/L	0.279	0.286	0.0139	0.0495	0.0057	0.0068
Chemistry Parameters (mg/	L)						
Sulfate (as SO ₄)		518 DJ-		88.9 DJ-		9.4 J-	
Total dissolved solids			1080		296		214

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

⁻⁻ Not scheduled.

TABLE B-3

(Page 4 of 17)

Lo Analyte (Units)	ocation Identification Location Type Date Collected	MS7 Stre 9/27/	eam		19 Dup eam 2016	Stro	19 Avg eam 2016
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	<.00008		<.00008		<.00008	
Calcium	C	55 D		55.1 D		55.05 D	
Magnesium		12.6		12.8		12.7	
Selenium	0.0031 mg/L	0.0018	0.0018 J	0.0017	0.0019 J	0.00175	.00185 J
Chemistry Parameters (mg/	L)						
Sulfate (as SO ₄)		14.2		14.1		14.15	
Total dissolved solids			218		211		214.5

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

⁻⁻ Not scheduled.

TABLE B-3

(Page 5 of 17)

Lo Analyte (Units)	Cation Identification Location Type Date Collected	MSTe Strea 5/11/2	am	MS7 Stre 9/27/	eam	MST Stres 5/9/20	am
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	0.000014 FJ		<.00008		0.000052 FJ	
Calcium	•	57.9 D		54.9 D		44.5 D	
Magnesium		9.82		12.8		9.24	
Selenium	0.0031 mg/L	0.0053	0.0057	0.0016	0.0017 J	0.00055	0.00075
Chemistry Parameters (mg/	L)						
Sulfate (as SO ₄)		9.0 J-		13.7		12.5 J-	
Total dissolved solids			223		205		195

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

⁻⁻ Not scheduled.

TABLE B-3

(Page 6 of 17)

Locat Analyte (Units)	eation Identification Location Type Date Collected	MST0 Strea 5/11/2	am	MST067 Stream 5/11/2016		MST069 Stream 5/11/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	0.000015 FJ		0.0011		0.0017	
Calcium		56.3 D		324 D		489 D	
Magnesium		14.5		69.5 D		85.6 D	
Selenium	0.0031 mg/L	0.0332	0.0339	0.461 D	0.447 D	1.49 D	1.59 D
Chemistry Parameters (mg/L	.)						
Sulfate (as SO ₄)		49.2 J-		820 DJ-		1180 DJ-	
Total dissolved solids			299		220		2020

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

⁻⁻ Not scheduled.

TABLE B-3

(Page 7 of 17)

Locat Analyte (Units)	ocation Identification Location Type Date Collected	MST069 Stream 9/27/2016		MST089 Stream 5/10/2016		MST090 Stream 5/10/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	0.00099		$0.000028 \mathrm{FJ}$		< 0.00008	
Calcium		456 D		67.2 D		60.7 D	
Magnesium		95.6 D		11.6		7.63	
Selenium	0.0031 mg/L	1.35 D	1.32 DJ	0.0053	0.0056	< 0.0005	0.00026 FJ
Chemistry Parameters (mg/	L)						
Sulfate (as SO ₄)		1190 D		38.6 J-		2.0 J-	
Total dissolved solids			2180		267		1550

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE B-3

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Locat Analyte (Units)	ation Identification Location Type Date Collected	MST0 Strea 5/10/2	am	Stre	MST094 Stream 5/10/2016		MST095 Stream 5/11/2016	
	Screening Levels							
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	
Cadmium	0.0006 mg/L	0.000045 FJ		$0.\overline{000018}\mathrm{FJ}$		0.0003		
Calcium		81.8 D		55.5 D		107 D		
Magnesium		15		6.34		25.6 D		
Selenium	0.0031 mg/L	0.013	0.0136	0.0008	0.00082	0.0864	0.0859	
Chemistry Parameters (mg/L)							
Sulfate (as SO ₄)		83.6 J-		4.5 J-		142 DJ-		
Total dissolved solids			321		182		475	

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

⁻⁻ Not scheduled.

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Locat Analyte (Units)	cation Identification Location Type Date Collected	MST Stre 5/10/2	am	NWPOND Pond 9/27/2016		SEPOND Pond 9/27/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	< 0.00008		<.00008		0.00011	
Calcium		93.5 D		44.1 D		40 D	
Magnesium		18.5		8.85		11.6	
Selenium	0.0031 mg/L	0.0609	0.0668	0.00057	0.0011 J	0.0068	0.0111 J
Chemistry Parameters (mg/	L)						
Sulfate (as SO ₄)	- <u>-</u> -	128 DJ-		2.4		7. 1	
Total dissolved solids			362		279		316

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Loca Analyte (Units)	cation Identification Location Type Date Collected	MDS See 5/13/2	p	MDS025 Seep 9/27/2016		MDS026 Seep 5/13/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	0.00076		0.0011		0.001	
Calcium	_	245 D		306 D		335 D	
Magnesium		61.5 D		82 D		76.6 D	
Selenium	0.0031 mg/L	0.174	0.177	0.0198	0.088 J	0.019	0.0786
Chemistry Parameters (mg/l	L)						
Sulfate (as SO ₄)		616 DJ-		744 D		741 DJ-	
Total dissolved solids			1080		1440		1390

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Loca Analyte (Units)	cation Identification Location Type Date Collected	MST Stre 5/13/2	eam	MST1 Strea 5/13/20	am Strea		ım
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	< 0.00008		0.000019 UBF		0.00003 UBF	
Calcium		71.4 D		62 D		70.3 D	
Magnesium		12.7		9.87		11.9	
Selenium	0.0031 mg/L	0.00093	0.00091	0.0038	0.0038	0.0016	0.0017
Chemistry Parameters (mg/l	L)						
Sulfate (as SO ₄)		27.5 J-		24.9 J-		27.4 J-	
Total dissolved solids			247		231		245

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Locat Analyte (Units)	cation Identification Location Type Date Collected	Stre	MST132 Dup Stream 5/13/2016		MST132 Avg Stream 5/13/2016		MST133 Stream 5/13/2016	
	Screening Levels							
Metals (mg/L)		Dissolved	Total	Dissolved	<u>Total</u>	Dissolved	Total	
Cadmium	0.0006 mg/L	< 0.00008		0.00003 UB		0.000025 UBF		
Calcium		65.7 D		68 D		48.3 D		
Magnesium		11.8		11.85		6.3		
Selenium	0.0031 mg/L	0.0017	0.0016	0.00165	0.00165	0.0049	0.0051	
Chemistry Parameters (mg/L	۵)							
Sulfate (as SO ₄)		27.4 J-		27.4 J-		15.9 J-		
Total dissolved solids			243		244		178	

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Loc Analyte (Units)	ation Identification Location Type Date Collected	MST1 Strea 5/12/20	m	Str	Stream St		T144 ream 5/2016	
	Screening Levels							
Metals (mg/L)		Dissolved	Total	Dissolved	<u>Total</u>	Dissolved	Total	
Cadmium	0.0006 mg/L	0.000061 UBF		0.000087 J+		0.000065 UBF		
Calcium	-	51.8 D		15.6		121 D		
Magnesium		8.16		4.04		28.2 D		
Selenium	0.0031 mg/L	0.0012	0.0015	$0.0002 \; \mathrm{FJ}$	0.00023 FJ	0.365	0.359	
Chemistry Parameters (mg/L)							
Sulfate (as SO ₄)		34.5 J-		1.4 J		261 DJ-		
Total dissolved solids			238 J-		104		515	

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	ocation Identification Location Type Date Collected	Strea	MST274 Stream 5/13/2016		MDS034 Seep 5/12/2016		Г044 eam /2016
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	0.000016 UBF		0.000068 UBF		0.000026 UBF	
Calcium		88.6 D		121 D		73 D	
Magnesium		12.1		42.6 D		20	
Selenium	$0.0031~\mathrm{mg/L}$	0.0033	0.0032	0.0313	0.0338	0.0004 FJ	0.00049 UBF
Chemistry Parameters (mg	₂ /L)						
Sulfate (as SO ₄)	, , 	51.0 J-		134 DJ-		61.6 J-	
Total dissolved solids			321		609 J-		373 J-

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Lo Analyte (Units)	ocation Identification Location Type Date Collected	Str	Г044 eam /2016	MST045 Stream 5/12/2016		MST045 Dup Stream 5/12/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	<.00008		0.000018 UBF		0.000027 UBF	
Calcium		66.4 D		81.6 D		71.9 D	
Magnesium		30.4 D		20.6		20.4	
Selenium	0.0031 mg/L	0.00063	0.00066 J	0.00059 J+	0.00056 J+	0.00054 J+	0.00048 UBF
Chemistry Parameters (mg/	L)						
Sulfate (as SO ₄)		152 D		61.2 J-		61 J-	
Total dissolved solids			492		378 J-		369 J-

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	ocation Identification Location Type Date Collected	MST04 Stre 5/12/	eam	MST045 Stream 9/27/2016		MST057 Stream 5/11/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	0.0000225 UBF		<.00008		< 0.00008	
Calcium	-	76.75 D		70.1 D		66 D	
Magnesium		20.5		30.6 D		10.7	
Selenium	0.0031 mg/L	0.000565 J+	0.00052 UBF	0.00073	0.00069 J	0.00024 FJ	0.00021 FJ
Chemistry Parameters (mg/	L)						
Sulfate (as SO ₄)		61.1 J-		153 D		12.5 J-	
Total dissolved solids			373.5 J-		519		249

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

⁻⁻ Not scheduled.

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Locati Analyte (Units)	ocation Identification Location Type Date Collected	MST063 Stream 5/11/2016		MST226 Stream 5/12/2016		MST275 Stream 5/12/2016	
	Screening Levels						
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.0006 mg/L	< 0.00008		0.000067 UBF		0.000022 UBF	
Calcium		78.6 D		50.8 DJ		10.4	
Magnesium		12		8.63		2.29	
Selenium	0.0031 mg/L	0.0208	0.0282	0.0042	0.004	< 0.0005	0.00023 UBF
Chemistry Parameters (mg	/L)						
Sulfate (as SO ₄)		31.9 J-		24 J-		1.7 J	
Total dissolved solids			299		188 J-		102 J-

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.



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Analyte (Units)	Location Identification Location Type Date Collected	MBW006 Bore Hole Well 5/15/2016		MBW009 Bore Hole Well 5/15/2016		MBW011 Bore Hole Well 5/15/2016		MBW027 Bore Hole Well 5/15/2016	
	Screening Levels								
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		0.000027 UBF		0.00011 J+		0.00013 J+		0.00024
Manganese	0.05 mg/L		0.0075		0.137		0.008		0.00064
Selenium	0.05 mg/L	0.405	0.363	0.0027	0.0029	0.452 D	0.662 D	0.257	0.239
Chemistry Paramet	ers (mg/L)								
Sulfate (as SO ₄)	250 mg/L	391 DJ-		349 DJ-		307 DJ-		188 DJ-	
Total dissolved s	solids 500 mg/L		796		717		751		564

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	Location Identification Location Type Date Collected	MBW028 Bore Hole Well 5/15/2016		MBW032 Bore Hole Well 5/11/2016		MBW032 Dup Bore Hole Well 5/11/2016		MBW032 Avg Bore Hole Well 5/11/2016	
	Screening Levels								
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		0.00026		0.00083		0.0008		0.000815
Manganese	0.05 mg/L		0.0405		0.0009		0.0014		0.00115
Selenium	0.05 mg/L	0.72 D	0.761 D	1.55 D	1.56 D	1.57 D	1.58 D	1.56 D	1.57 D
Chemistry Paramet	ters (mg/L)								
Sulfate (as SO ₄)	250 mg/L	459 DJ-		1160 DJ-		1030 DJ-		1095 DJ-	
Total dissolved s	solids 500 mg/L		976		1900		1890		1895

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	Location Identification Location Type Date Collected	MBW048 Bore Hole Well 5/14/2016		MBW130 Bore Hole Well 5/15/2016		MBW131 Bore Hole Well 5/14/2016		MBW135 Bore Hole Well 5/14/2016	
	Screening Levels								
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		0.00014		0.00046		0.00014		0.000028 UBF
Manganese	0.05 mg/L		0.346		0.127		0.0014		0.141
Selenium	0.05 mg/L	< 0.0005	< 0.0005	0.00026 FJ	0.00039 FJ	0.0016	0.002	< 0.0005	< 0.0005
Chemistry Paramet	ters (mg/L)								
Sulfate (as SO ₄)	250 mg/L	5.4 J-		10.7 J-		2.9 J-		51.0 J-	
Total dissolved	solids 500 mg/L		130		145		111		267

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	Location Identification Location Type Date Collected	MMW006 Monitoring Well 5/10/2016		MMW017 Monitoring Well 5/11/2016		MMW018 Monitoring Well 5/11/2016		MMW020 Monitoring Well 5/15/2016	
	Screening Levels								
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		< 0.00008		0.00045		< 0.00008		0.0069
Manganese	0.05 mg/L		0.00015 FJ		0.0028		0.023		0.0478
Selenium	0.05 mg/L	0.151	0.157	0.156	0.155	0.0297	0.0302	0.0664	0.0653
Chemistry Paramet	ers (mg/L)								
Sulfate (as SO ₄)	250 mg/L	90.4 J-		520 DJ-		46.4 J-		203 DJ-	
Total dissolved s	solids 500 mg/L		332		1090		264		626

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	ocation Identification Location Type Date Collected	Monit	MW021 oring Well 10/2016	Monitor	W029 ring Well /2016	Monitor	W030 ing Well /2016	MMW031 Monitoring Well 5/13/2016			
	Screening Levels										
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total		
Cadmium	0.005 mg/L		0.000061 UBF		< 0.00008		< 0.00008		< 0.00008		
Manganese	0.05 mg/L		< 0.0005		0.00058		0.0211		0.00015 FJ		
Selenium	0.05 mg/L	0.0544	0.0556	0.634 D	0.626 D	< 0.0005	< 0.0005	0.00088	0.00093		
Chemistry Parameter	ers (mg/L)										
Sulfate (as SO ₄)	250 mg/L	48.7 J-		642 DJ-		15.0 J-		2.9 J-			
Total dissolved s	olids 500 mg/L		358		1280		229		167		

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	Location Identification Location Type Date Collected	Monitor	MMW032 Monitoring Well 5/15/2016		W033 ring Well /2016	Monitor	/15A ring Well /2016	MW16A Monitoring Well 5/10/2016		
	Screening Levels									
Metals (mg/L)		Dissolved	<u>Total</u>	Dissolved	Total	Dissolved	Total	Dissolved	Total	
Cadmium	0.005 mg/L		0.00017		0.000013 UBF		0.00022		< 0.00008	
Manganese	0.05 mg/L		0.0016		0.0443		0.00018 FJ		1.81 D	
Selenium	0.05 mg/L	0.002	0.002	0.00018 FJ	0.00014 FJ	1.04 D	1.09 D	0.0088	0.0082	
Chemistry Parame	ters (mg/L)									
Sulfate (as SO ₄)	250 mg/L	5.6 J-		28.2 J-		619 D		783 DJ-		
Total dissolved	solids 500 mg/L		224		267		1340		1370	

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	Location Identification Location Type Date Collected	MBW085 Bore Hole Well 5/14/2016		Bore H	W087 Iole Well I/2016	Bore F	W099 Iole Well I/2016	MMW007 Monitoring Well 5/13/2016				
	Screening Levels											
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	<u>Total</u>	Dissolved	Total			
Cadmium	0.005 mg/L		0.000015 UBF		0.000038 UBF		0.000054 UBF		0.000015 UBF			
Manganese	0.05 mg/L		0.0043		0.0459		0.004		0.059			
Selenium	0.05 mg/L	0.0011	0.0011	0.00022 FJ	0.00024 FJ	0.00038 FJ	0.00015 FJ	0.0017	0.0015			
Chemistry Paramet	ters (mg/L)											
Sulfate (as SO ₄)	250 mg/L	22.3 J-		23.8 J-		39.1 J-		14.8 J-				
Total dissolved	solids 500 mg/L		215		331		215		158			

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	Location Identification Location Type Date Collected	Monitor	W009 ring Well /2016	Monitor	W013 ring Well /2016	Monitor	W024 ring Well /2016	MMW025 Monitoring Well 5/14/2016			
	Screening Levels										
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total		
Cadmium	0.005 mg/L		0.00021 J+		< 0.00008		< 0.00008		< 0.00008		
Manganese	0.05 mg/L		0.0668		0.0177		0.00016 FJ		0.0024		
Selenium	0.05 mg/L	< 0.0005	< 0.0005	0.178	0.17	0.0613	0.0574	0.00059	0.00053		
Chemistry Paramet	ters (mg/L)										
Sulfate (as SO ₄)	250 mg/L	60.7 J-		159 DJ-		340 DJ-		11.0 J-			
Total dissolved s	solids 500 mg/L		393		467		781		171		

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	Location Identification Location Type Date Collected	Monitor	W026 ring Well /2016	Monito	W027 ring Well /2016	Monitor	W034 ring Well /2016	MMW034 Dup Monitoring Well 5/14/2016			
	Screening Levels										
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total		
Cadmium	0.005 mg/L		< 0.00008		0.00016 J+		< 0.00008		< 0.00008		
Manganese	0.05 mg/L		0.00053		0.00089		0.00033 FJ		$0.0002 \; \mathrm{FJ}$		
Selenium	0.05 mg/L	0.0013	0.0013	0.689 D	0.759 D	0.0857	0.0888	0.0886	0.0838		
Chemistry Paramet	ers (mg/L)										
Sulfate (as SO ₄)	250 mg/L	25.2 J-		334 DJ-		132 DJ-		133 DJ-			
Total dissolved s	solids 500 mg/L		243		840		390		370		

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

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Analyte (Units)	Location Identification Location Type Date Collected	Location Type Monitoring Well Monitoring Well						Monitor	W037 ing Well /2016
	Screening Levels								
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total
Cadmium	0.005 mg/L		< 0.00008		< 0.00008		0.000018 UBF		< 0.00008
Manganese	0.05 mg/L		0.000265 FJ		0.0016		0.0018		0.0021
Selenium	0.05 mg/L	0.08715	0.0863	1.16 D	1.15 D	0.0194	0.0199	0.0306	0.0282
Chemistry Paramet	ers (mg/L)								
Sulfate (as SO ₄)	250 mg/L	132.5 DJ-		498 DJ-		22.9 J-		31.0 J-	
Total dissolved s	solids 500 mg/L		380		1160		246		260

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE B-4

(Page 11 of 13)

Analyte (Units)	Location Identification Location Type Date Collected te (Units)		037 Dup ing Well /2016	Monitor	037 Avg ing Well 2016	MMV Monitori 5/12/2	ng Well	MMW011 Monitoring Well 5/12/2016				
	Screening Levels											
Metals (mg/L)		Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total			
Cadmium	0.005 mg/L		< 0.00008		< 0.00008		0.0058		0.0007			
Manganese	0.05 mg/L		0.0023		0.0022		0.0123		0.00027 UBF			
Selenium	0.05 mg/L	0.0304	0.0288	0.0305	0.0285	0.127	0.118	0.0005 UBF	0.00041 UBF			
Chemistry Paramet	ters (mg/L)											
Sulfate (as SO ₄)	250 mg/L	31.0 J-		31 J-		735 DJ-		136 DJ-				
Total dissolved	solids 500 mg/L		254		257		1520 J-		532 J-			

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE B-4

(Page 12 of 13)

Analyte (Units)	Location Identification Location Type Date Collected rte (Units)		W022 ing Well 2016	MMV Monitor 5/12/	ing Well	Monito	W028 ring Well ½2016	MMW028 Dup Monitoring Well 5/12/2016			
	Screening Levels										
Metals (mg/L)		Dissolved	<u>Total</u>	Dissolved	Total	Dissolved	Total	Dissolved	Total		
Cadmium	0.005 mg/L		0.00058		0.000043 FJ		0.000013 FJ		0.000023 UBF		
Manganese	0.05 mg/L		0.193		0.308		< 0.0005		< 0.0005		
Selenium	0.05 mg/L	0.0478	0.0446	0.00018 UBF	< 0.0005	0.005	0.0036	0.0046	0.0037		
Chemistry Paramet	ters (mg/L)										
Sulfate (as SO ₄)	250 mg/L	273 DJ-		221 DJ-		68.7 J-		68.5 J-			
Total dissolved s	solids 500 mg/L		683 J-		670 J-		349 J-		349 J-		

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

TABLE B-4

SUMMARY OF 2016 GROUNDWATER RESULTS P4 RI/FS

(Page 13 of 13)

	Location Identification Location Type Date Collected	Monito	7028 Avg oring Well 2/2016
Analyte (Units)			
	Screening		
3.5 () () (5)	Levels	D: 1 1	TT 4 1
Metals (mg/L)		Dissolved	<u>Total</u>
Cadmium	0.005 mg/L		0.000018 UBF
Manganese	0.05 mg/L		< 0.0005
Selenium	0.05 mg/L	0.0048	0.00365
Chemistry Param	eters (mg/L)		
Sulfate (as SO ₄	₄) 250 mg/L	68.6 J-	
Total dissolved	l solids 500 mg/L		349 J-

mg/l milligrams per liter.

Bold Bolded result indicates positively identified compound.

-- Not scheduled.

- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the reporting limit, but greater than the method detection limit.
- J Data are estimated due to associated quality control data.
- UB Analyte considered not detected based on associated blank data.

APPENDIX C - LABORATORY DATA CONSULTANTS (LDC)
THIRD PARTY VERIFICATION REPORTS

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

MWH Americas, Inc. 2890 East Cottonwood Parkway Suite 300 Salt Lake City, UT 84121

July 7, 2016

ATTN: Ms. Betty VanPelt

SUBJECT: Monsanto, P4 Background, Data Validation

Dear Ms. VanPelt,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 13, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #36509:

SDG # Fraction

10348344, 10348356, 10348364 10348833, 10348839, 10349184 Metals & Wet Chemistry

The data verification was performed under Stage 2B & 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- QAPP Addendum, MWH 2009, to the project SAP, April, 2004
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

Project Manager/Chemist

	2926-Pages SF	EDD												Atta	achn	nent	: 1																				
	90/10 2B/4		LDC	#30	650)9 (I	VΙV	/H /	٩m	erio	cas	, In	cS	Salt	: La	ke	Cit	y, I	JT.	/ N	lon	sar	nto	, P4	₽ Ba	ack	gro	un	d)								
LDC	SDG#	DATE REC'D	(3) DATE DUE	s	Mn Se 20A)	S (602		Dis S (602	е	Dis Cd, Ca, (602	Se, Mg	S(O₄ 0.0)	TE (254																							
Matrix:	Water/Soil	· · · · · · · · · · · · · · · · · · ·		W	s	W	s	w	s	w	s	W	S	W	s	w	s	w	s	w	s	w	s	w	s	w	s	w	s	w	s	w	s	w	S	W	s
Α	10348344	06/13/16	07/05/16	<u> </u> -	<u> </u> -	9	0		_	9	0	9	0	9	0			L	<u> </u>							<u> </u>					<u> </u>		<u> </u>				
В	10348356	06/13/16	07/05/16	6	0	<u> </u>		6	0	-	_	6	0	6	0									<u> </u>													
С	10348364	06/13/16	07/05/16	4	0	11	0_	4	0	11	0	15	0	15	0				L_							<u> </u>						Í					
D	10348833	06/13/16	07/05/16	6	0	10	0	6	0	10	0	16	0	16	0																						
E	10348839	06/13/16	07/05/16	23	0	<u> </u>	-	23	0	-	_	23	0	23	0																						П
F	10349184	06/13/16	07/05/16	1	0	3	0	2	0	3	0	5	0	5	0																						П
F	10349184	06/13/16			0	4	0	4	0	4	0	8	0	8	0																						
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Total	A/CR	<u></u>	L	45	0	37	0	45	0	37	0	82	0	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Monsanto, P4 Production LLC

Report Date: July 6, 2016

Matrix: Water

Parameters: Metals by ICPMS SW-846 Method 6020A

Validation Level: Stage 2B

Laboratory: Pace Analytical

Sample Delivery Group (SDG): 10348344

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMSG006-U	05/11/16	10348344001
1605SWMSG007-U	05/11/16	10348344003
1605SWMT095-U	05/11/16	10348344005
1605SWMT069-U	05/11/16	10348344007
1605SWMT020-U	05/11/16	10348344009
1605SWMT066-U	05/11/16	10348344011
1605SWMT067-U	05/11/16	10348344013
1605SWMT063-U	05/11/16	10348344015
1605SWMT057-U	05/11/16	10348344017
1605SWMSG006-F	05/11/16	10348344002
1605SWMSG007-F	05/11/16	10348344004
1605SWMT095-F	05/11/16	10348344006
1605SWMT069-F	05/11/16	10348344008
1605SWMT020-F	05/11/16	10348344010
1605SWMT066-F	05/11/16	10348344012
1605SWMT067-F	05/11/16	10348344014
1605SWMT063-F	05/11/16	10348344016

Introduction

This data review covers 18 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA SW 846 Method noted below:

Method 6020A ICPMS: Cadmium, Calcium, Magnesium, and Selenium.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements were met: 6 months for water and soil (note NIST soil standard reference samples are valid for up to 3 years).

All samples were received intact with proper preservation (pH < 2 for water).

II. ICP-MS Tune Analysis

ICP MS Tuning was performed by the laboratory. All isotopes in the tuning solution mass resolution were within 0.1 amu. Resolutions are < 0.9 amu full width at 10% peak height (Level IV review only).

The percent relative standard deviations (%RSD) of all isotopes in the tuning solution were less than or equal to 5.0%.

III. Calibration

An initial calibration was performed each day of analysis. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

The low-level initial calibration verification (LLICV) and low-level continuing calibration verifications (LLCCVs) standard frequency and limits (70-130%) were met. Limit for manganese are 50 -150%. Only undetected data, or values < 2 x RL are qualified or impacted.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No metal contaminants were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

V. ICP-MS Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

ICP interference check samples were reviewed for each analyte as applicable. Percent recovery (%R) of the ICSAB were within the QC limits of 80-120%.

VI. Laboratory Control Sample (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VIII. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits (35% soils).

For 10348356002MS/MSD no data were qualified for Calcium percent recoveries outside the QC limits since the parent sample results were greater than 4X the spike concentration and a non-client sample was used.

IX. ICP-MS Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria of ±10% difference for values greater than 50 times the lower limit of quantitation (i.e., the reporting limits [RLs]) were met.

X. ICP-MS Internal Standards

All internal standard percent recoveries (%R) were within 70-130% or a 2x dilution was run with acceptable recoveries

XI. Field Replicates

Field replicate samples were collected in triplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

XII(a). Sample Result Verification

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

XII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Metals - Data Qualification Summary - SDG 10348344

No Sample Data Qualified in this SDG

Metals - Laboratory Blank Data Qualification Summary - SDG 10348344

No Sample Data Qualified in this SDG

Metals - Field Blank Data Qualification Summary - SDG 10348344

No Sample Data Qualified in this SDG

LDC #:	36509A4
SDG #:	10348344

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 71/11/2
Page: <u>\</u> of <u></u> 2
Reviewer:
2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
<u>].</u>	Sample receipt/Technical holding times	A	Shilis
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	A	
VI.	Field Blanks	2	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	MSID = Non client sample
VIII.	Duplicate sample analysis	2	
IX.	Serial Dilution	A	SER- Non Client Sample
X.	Laboratory control samples	A	LCS.
XI.	Field Duplicates	2	
XII.	Internal Standard (ICP-MS)	A	
XIII.	Sample Result Verification	N	
XIV	Overall Assessment of Data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank
EB = Equipment blank

SB=Source blank OTHER:

	Client ID		Lab ID	Matrix	Date
1	1605SWMSG006-U		10348344001	Water	05/11/16
2	1605SWMSG007-U		10348344003	Water	05/11/16
3	1605SWMT095-U		10348344005	Water	05/11/16
4	1605SWMT069-U		10348344007	Water	05/11/16
5	1605\$WMT020-U		10348344009	Water	05/11/16
6	1605SWMT066-U		10348344011	Water	05/11/16
7	1605SWMT067-U		10348344013	Water	05/11/16
8	1605SWMT063-U		10348344015	Water	05/11/16
9	1605SWMT057-U		10348344017	Water	05/11/16
10	1605SWMSG006-F Mg, Cd. Sc	, Ca	10348344002	Water	05/11/16
11	1605SWMSG007-F		10348344004	Water	05/11/16
12	1605SWMT095-F		10348344006	Water	05/11/16
13	1605SWMT069-F		10348344008	Water	05/11/16
14	1605SWMT020-F		10348344010	Water	05/11/16
15_	1605SWMT066-F		10348344012	Water	05/11/16

LDC #:	36509A4
SDG #	10348344

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7 1/1/16
Page: ZofZ
Reviewer:
2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020A)

	Client ID		Lab ID	Matrix	Date
16	1605SWMT067-F	My, Cd, Se, Ca	10348344014	Water	05/11/16
17	1605SWMT063-F	3	10348344016	Water	05/11/16
18	1605SWMT057-F		10348344018	Water	05/11/16
19					
20					
21					
22					
23_					

LDC #: 36809 AVB

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page:_	<u>`</u> of__
Reviewer:	QZ
2nd reviewer:	a

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
		Talyer Allaryte List (TAL)
1-9	\mathcal{W}	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K/Se, Ag, Na, Ti, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
10-18	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K/Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Ti, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	·-···	Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments:	Mercury by CVAA if performed		 	

LDC #: 36509A4aD

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: __of_\ Reviewer: __J_ 2nd Reviewer: ____

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see d	qualifications	below for all	questions answered	"N". Not	t applicable	questions a	are identified as	"N/A".
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Was a matrix spike analyzed for each matrix in this SDG?

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

 $\sqrt{\frac{Y}{N} N/A}$ Were all duplicate sample relative percent differences (RPD) \leq 20% for samples?

LEVEL IV ONLY:

Y/N/N/A

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix_	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications.
	10348356002 MS/D (non client sample)	W	Ca	61	51		10-18	No Qual. (>4X) (١७)
					 -			
H					·			
								\

Comments:	 	 	 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Monsanto, P4 Production LLC

Report Date: July 6, 2016

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2B

Laboratory: Pace Analytical

Sample Delivery Group (SDG): 10348344

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMSG006-U	05/11/16	10348344001
1605SWMSG007-U	05/11/16	10348344003
1605SWMT095-U	05/11/16	10348344005
1605SWMT069-U	05/11/16	10348344007
1605SWMT020-U	05/11/16	10348344009
1605SWMT066-U	05/11/16	10348344011
1605SWMT067-U	05/11/16	10348344013
1605SWMT063-U	05/11/16	10348344015
1605SWMT057-U	05/11/16	10348344017
1605SWMSG006-F	05/11/16	10348344002
1605SWMSG007-F	05/11/16	10348344004
1605SWMT095-F	05/11/16	10348344006
1605SWMT069-F	05/11/16	10348344008
1605SWMT020-F	05/11/16	10348344010
1605SWMT066-F	05/11/16	10348344012
1605SWMT067-F	05/11/16	10348344014
1605SWMT063-F	05/11/16	10348344016
1605SWMT057-F	05/11/16	10348344018
1605SWMT066-FMS	05/11/16	10348344012MS
1605SWMT066-FMSD	05/11/16	10348344012MSD
1605SWMSG007-UDUP	05/11/16	10348344003DUP

Introduction

This data review covers 21 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the methods noted below:

 EPA Method 300.0 for Sulfate and Standard Method 2540C for Total Dissolved Solids.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements (28 days for method 300.0 and 7 days for method 2540C) were met.

All samples were received intact (preserved as required according to each method).

II. Calibration

An initial calibration was performed each day of analysis. The blank plus 6 standard curve produced a coefficient of determination (r^2) of > 0.990. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Sulfate	0.44 mg/L	1605SWMT067-F 1605SWMT057-F
PB (prep blank)	Total dissolved solids	5.0 mg/L	1605SWMSG007-U 1605SWMT095-U 1605SWMT069-U 1605SWMT020-U 1605SWMT066-U 1605SWMT067-U 1605SWMT063-U 1605SWMT057-U

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

No field blanks were identified in this SDG.

IV. Laboratory Control Sample (LCS)

Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within the QC limits of 80-120% and relative percent differences (RPD) were within 20% limits.

V. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VI. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 90-110% (80-120% TDS) and relative percent differences (RPD) were within 20% limits (35% soils) with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
1605SWMST089-FMS/MSD (1605SWMSG006-F 1605SWMSG007-F 1605SWMT095-F 1605SWMT069-F 1605SWMT020-F)	Sulfate	67 (90-110)	63 (90-110)	J- (all detects)	А
1605SWMSG005-FMS/MSD (1605SWMSG006-F 1605SWMSG007-F 1605SWMT095-F 1605SWMT069-F 1605SWMT020-F)	Sulfate	43 (90-110)	66 (90-110)	J- (all detects)	А
1605GWMMW018-FMS/MSD (1605SWMT066-F 1605SWMT067-F 1605SWMT063-F 1605SWMT057-F)	Sulfate	61 (90-110)	53 (90-110)	J- (all detects)	Α
1605SWMT066-FMS/MSD (1605SWMT066-F 1605SWMT067-F 1605SWMT063-F 1605SWMT057-F)	Sulfate	22 (90-110)	49 (90-110)	J- (all detects)	А

IV. Laboratory Control Sample (LCS)

Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within the QC limits of 80-120% and relative percent differences (RPD) were within 20% limits.

V. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VI. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 90-110% (80-120% TDS) and relative percent differences (RPD) were within 20% limits (35% soils) with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
1605SWMST089-FMS/MSD (1605SWMSG006-F 1605SWMSG007-F 1605SWMT095-F 1605SWMT069-F 1605SWMT020-F)	Sulfate	67 (90-110)	63 (90-110)	J- (all detects)	A
1605SWMSG005-FMS/MSD (1605SWMSG006-F 1605SWMSG007-F 1605SWMT095-F 1605SWMT069-F 1605SWMT020-F)	Sulfate	43 (90-110)	66 (90-110)	J- (all detects)	A
1605GWMMW018-FMS/MSD (1605SWMT066-F 1605SWMT067-F 1605SWMT063-F 1605SWMT057-F)	Sulfate	61 (90-110)	53 (90-110)	J- (all detects)	Α
1605SWMT066-FMS/MSD (1605SWMT066-F 1605SWMT067-F 1605SWMT063-F 1605SWMT057-F)	Sulfate	22 (90-110)	49 (90-110)	J- (all detects)	А

VII. Field Replicates

Field replicate samples were collected in duplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

VIII(a). Sample Result Verification

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

VIII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Wet Chemistry - Data Qualification Summary - SDG 10348344

Sample	Analyte	Flag	A or P	Reason (Code)
1605SWMSG006-F 1605SWMSG007-F 1605SWMT095-F 1605SWMT069-F 1605SWMT020-F 1605SWMT066-F 1605SWMT067-F 1605SWMT063-F 1605SWMT057-F	Sulfate	J- (all detects)	А	Matrix spike/Matrix spike duplicate (%R) (16)

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 10348344

No Sample Data Qualified in this SDG

Wet Chemistry - Field Blank Data Qualification Summary - SDG 10348344

No Sample Data Qualified in this SDG

LDC #: 36509A6 SDG #:__ 10348344

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET Stage 2B

Reviewer: 30 2nd Reviewer:

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	Shilis
11 _	Initial calibration	A	
111.	Calibration verification	A	
IV	Laboratory Blanks	SW	
	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	SW	MSIO = SW
VII.	Duplicate sample analysis	A	DUR = 1605 GWHMWOB-UDUP(506:1034835)
VIII.	Laboratory control samples	A	LLS
IX.	Field duplicates	N	
Χ	Sample result verification	N	
XI.	Overall assessment of data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

Client ID Lab ID Matrix Date 1605SWMSG006-U 201 10348344001 Water 05/11/16 10348344003 Water 05/11/16 1605SWMSG007-U 1605SWMT095-U 10348344005 Water 05/11/16 1605SWMT069-U 10348344007 Water 05/11/16 10348344009 05/11/16 5 1605SWMT020-U Water 1605SWMT066-U 10348344011 Water 05/11/16 6 Water 1605SWMT067-U 10348344013 05/11/16 1605SWMT063-U 10348344015 Water 05/11/16 8 9 1605SWMT057-U 10348344017 Water 05/11/16 <u>S03</u> 10348344002 05/11/16 10 1605SWMSG006-F Water 10348344004 Water 05/11/16 1605SWMSG007-F 11 10348344006 Water 05/11/16 12 1605SWMT095-F Water 13 1605SWMT069-F 10348344008 05/11/16 1605SWMT020-F 10348344010 Water 05/11/16 14 10348344012 05/11/16 1605SWMT066-F Water 15 10348344014 Water 05/11/16 16 1605SWMT067-F 1605SWMT063-F 10348344016 Water 05/11/16

LDC #:	36509A6	
SDG #	10348344	

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET Stage 2B

Date: <u> </u>
Page: <u>∠</u> of <u>∠</u>
Reviewer: 30
2nd Reviewer:

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

	Client ID	·	Lab ID	Matrix	Date
18	1605SWMT057-F	504	10348344018	Water	05/11/16
19	-ISMS				
20	#IS MSD				
21	#2008				
22					
23_					
Note	s:				

LDC#: 36507A4

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:	<u>1_</u> of1_
Reviewer:_	JD
2nd reviewer	:

All circled methods are applicable to each sample.

Sample ID	Parameter
1001	pH (TDS) CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₃ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ (SO) O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
ł /i l	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC.19-20	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC-21	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO $_3$ NO $_2$ SO $_4$ O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO, NO, SO, O-PO, Alk CN NH, TKN TOC Cr6+ ClO,

Comments:	_					

LDC #: 36509A6

VALIDATION FINDINGS WORKSHEET Blanks

Page: of \
Reviewer: 500
2nd Reviewer: 200

METHOD:Inorganics, Method See Cover

Conc. units	s: <u>mg/l</u>				Asso	ociated Sar	nples: <u>16</u>	5, 18 (16 = 1	0X) (10)	 · · · · · · · · · · · · · · · · · · ·	
Analyte	Blank ID	Blank ID	Blank								
	РВ	ICB/CCB (mg/L)	Action Limit	No Qualifiers							
SO4		0.44	2.2								

Conc. unit	s: <u>mg/L</u>				Asso	ciated San	nples: <u>2-</u>	9	(11)	 , <u>, ,</u>	
Analyte	Blank ID	Blank ID	Blank						- ,		
	РВ	ICB/CCB (mg/L)	Action Limit	No Qualifiers							
TDS	5.0		25								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 36509A6

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:`	<u> </u>
Reviewer:	OE
2nd Reviewer:	Q_{χ}

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

В	le	ase see	qualifications	s below for all	questions answered	"N". Not ap	oplicable questions	s are identified as "N/A".
,	. 2							

Was a matrix spike analyzed for each matrix in this SDG?

Were matrix spike percent recoveries (%R) within the control limits of 80-120? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

 $\sqrt{Y/N_N/A}$ Were all duplicate sample relative percent differences (RPD) \leq 20% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix_	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	1605SWMST089-F MS/D (SDG: 10348364)		SO4	67	63		10-14	J-/UJ/A (det) (16)
	1605SWMSG005-F MS/D (SDG: 10348364)	W	SO4	43	66		10-14	J-/UJ/A (det) (16)
	1605GWMMW018- F MS/D (SDG: 10348356)	W	SO4	61	53		15-18	J-/UJ/A (det) (16)
	19/20	W	SO4	22	49		15-18	J-/R/A (det) (16)
L								

Comments:	 	 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Monsanto, P4 Production LLC

Report Date: July 6, 2016

Matrix: Water

Parameters: Metals by ICPMS SW-846 Method 6020A

Validation Level: Stage 2B

Laboratory: Pace Analytical

Sample Delivery Group (SDG): 10348356

Sample Identification	Collection Date	Laboratory Sample Identification
1605GWMMW018-U	05/11/16	10348356001
1605GWMMW029-U	05/11/16	10348356003
1605GWMMW033-U	05/11/16	10348356005
1605GWMBW032-1-U	05/11/16	10348356007
1605GWMBW032-2-U	05/11/16	10348356009
1605GWMMW017-U	05/11/16	10348356012
1605GWMMW018-F	05/11/16	10348356002
1605GWMMW029-F	05/11/16	10348356004
1605GWMMW033-F	05/11/16	10348356006
1605GWMBW032-1-F	05/11/16	10348356008
1605GWMBW032-2-F	05/11/16	10348356010
1605GWMMW017-F	05/11/16	10348356011
1605GWMMW018-UMS	05/11/16	10348356001MS
1605GWMMW018-UMSD	05/11/16	10348356001MSD
1605GWMMW018-FMS	05/11/16	10348356002MS
1605GWMMW018-FMSD	05/11/16	10348356002MSD

Introduction

This data review covers 16 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA SW 846 Method noted below:

Method 6020A ICPMS: Cadmium, Manganese, and Selenium.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements were met: 6 months for water and soil (note NIST soil standard reference samples are valid for up to 3 years).

All samples were received intact with proper preservation (pH < 2 for water).

II. ICP-MS Tune Analysis

ICP MS Tuning was performed by the laboratory. All isotopes in the tuning solution mass resolution were within 0.1 amu. Resolutions are < 0.9 amu full width at 10% peak height (Level IV review only).

The percent relative standard deviations (%RSD) of all isotopes in the tuning solution were less than or equal to 5.0%.

III. Calibration

An initial calibration was performed each day of analysis. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

The low-level initial calibration verification (LLICV) and low-level continuing calibration verifications (LLCCVs) standard frequency and limits (70-130%) were met. Limit for manganese are 50 -150%. Only undetected data, or values < 2 x RL are qualified or impacted.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No metal contaminants were found in the initial, continuing and preparation blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Cadmium	0.014 ug/L	1605GWMMW018-U 1605GWMMW029-U 1605GWMMW033-U 1605GWMBW032-1-U 1605GWMBW032-2-U 1605GWMMW017-U

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
1605GWMMW033-U	Cadmium	0.013 ug/L	0.013U ug/L

No field blanks were identified in this SDG.

V. ICP-MS Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

ICP interference check samples were reviewed for each analyte as applicable. Percent recovery (%R) of the ICSAB were within the QC limits of 80-120%.

VI. Laboratory Control Sample (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VIII. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits (35% soils).

IX. ICP-MS Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria of $\pm 10\%$ difference for values greater than 50 times the lower limit of quantitation (i.e., the reporting limits [RLs]) were met.

X. ICP-MS Internal Standards

All internal standard percent recoveries (%R) were within 70-130% or a 2x dilution was run with acceptable recoveries

XI. Field Replicates

Field replicate samples were collected in triplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

XII(a). Sample Result Verification

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

XII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Metals - Data Qualification Summary - SDG 10348356

No Sample Data Qualified in this SDG

Metals - Laboratory Blank Data Qualification Summary - SDG 10348356

Sample	Analyte	Modified Final Concentration	A or P	Code
1605GWMMW033-U	Cadmium	0.013U ug/L	A	10

Metals - Field Blank Data Qualification Summary - SDG 10348356

No Sample Data Qualified in this SDG

LDC #:_	36509B4D
SDG #:	10348356
Laborat	ory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: \\\\\	,
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Reviewer: 30	
2nd Reviewer:	

METHOD: Metals (EPA SW 846 Method 6020A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	<u> </u>	Shillip
II.	ICP/MS Tune	A	
111.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	2	
VII.	Matrix Spike/Matrix Spike Duplicates	A	MSD = (13,14) (15.16)
VIII.	Duplicate sample analysis	2	J
IX.	Serial Dilution	A	
Χ.	Laboratory control samples	A	LCS
XI.	Field Duplicates	2	
XII.	Internal Standard (ICP-MS)	A	
XIII.	Sample Result Verification	N	
XIV	Overall Assessment of Data		

Note:

A = Acceptable N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank

D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID		Lab ID	Matrix	Date
1	1605GWMMW018-U	Cd, My Se	10348356001	Water	05/11/16
2	1605GWMMW029-U		10348356003	Water	05/11/16
3	1605GWMMW033-U		10348356005	Water	05/11/16
4	1605GWMBW032-₩ `\ ~ ∪		10348356007	Water	05/11/16
5	1605GWMBW0324L -Z-U		10348356009	Water	05/11/16
6	1605GWMMW017-U	7	10348356012	Water	05/11/16
7	1605GWMMW018-F	Se	10348356002	Water	05/11/16
8	1605GWMMW029-F		10348356004	Water	05/11/16
9	1605GWMMW033-F		10348356006	Water	05/11/16
10	1605GWMBW032 F -\-F		10348356008	Water	05/11/16
11	1605GWMBW032-F -2-F		10348356010	Water	05/11/16
12	1605GWMMW017-F	7	10348356011	Water	05/11/16
13	1605GWMMW018-UMS	Cd, Mn, Se	10348356001MS	Water	05/11/16
14	1605GWMMW018-UMSD	4	10348356001MSD	Water	05/11/16
15	1605GWMMW018-FMS	Se	10348356002MS	Water	05/11/16

LDC #:_	36509B4a
SDG #:	10348356

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Page: Zof Z Reviewer: SO 2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020A)

	Client ID		Lab ID	Matrix	Date
16	1605GWMMW018-FMSD	Se	10348356002MSD	Water	05/11/16
17					
18					
19					
20					
21_					
lote	S:				

LDC #: 3000 RHD

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

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Reviewer: 200

2nd reviewer: 400

All circled elements are applicable to each sample.

[
Sample ID		Target Analyte List (TAL)
1-6	ω	Al, Sb, As, Ba, Be (Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg/Mn/Hg, Ni, K, Se) Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
7-12	ω	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K(Se) Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC:13-14	W	Al, Sb, As, Ba, Be, Cd Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC:15-16	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K(Se) Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sh, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Ti, V, Zn, Mo, B, Sn, Ti

Comments:	Mercury by CVAA if performed		
		 	

LDC #: 36509B4

VALIDATION FINDINGS WORKSHEET PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1 Reviewer: JD

2nd Reviewer:

METHOD: Metals (EPA SW 864 Method 6010/6020/7000) Sample Concentration units, unless otherwise noted:

Soil preparation factor applied: Associated Samples:

1-6 (10)

Sample Concentration units, unless otherwise noted:			ise noted:	ug/L	Associate	d Samples:	1-6	(10)			
	37.2 (F.2)			- 6				Sample li	entitieation		
Analyte	Maximum PB ^a (mg/Kg)	PB ^a	Maximum ICB/CCB ^a		3						
Cd			0.014	0.07	0.013						

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note: a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Monsanto, P4 Production LLC

Report Date: July 6, 2016

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2B

Laboratory: Pace Analytical

Sample Delivery Group (SDG): 10348356

Sample Identification	Collection Date	Laboratory Sample Identification
1605GWMMW018-U	05/11/16	10348356001
1605GWMMW029-U	05/11/16	10348356003
1605GWMMW033-U	05/11/16	10348356005
1605GWMBW032-1-U	05/11/16	10348356007
1605GWMBW032-2-U	05/11/16	10348356009
1605GWMMW017-U	05/11/16	10348356012
1605GWMMW018-F	05/11/16	10348356002
1605GWMMW029-F	05/11/16	10348356004
1605GWMMW033-F	05/11/16	10348356006
1605GWMBW032-1-F	05/11/16	10348356008
1605GWMBW032-2-F	05/11/16	10348356010
1605GWMMW017-F	05/11/16	10348356011
1605GWMMW018-UDUP	05/11/16	10348356001DUP
1605GWMMW018-FMS	05/11/16	10348356002MS
1605GWMMW018-FMSD	05/11/16	10348356002MSD

Introduction

This data review covers 15 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the methods noted below:

 EPA Method 300.0 for Sulfate and Standard Method 2540C for Total Dissolved Solids.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements (28 days for method 300.0 and 7 days for method 2540C) were met.

All samples were received intact (preserved as required according to each method).

II. Calibration

An initial calibration was performed each day of analysis. The blank plus 6 standard curve produced a coefficient of determination (r^2) of > 0.990. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Sulfate	0.44 mg/L	1605GWMMW033-F
PB (prep blank)	Total dissolved solids	5.0 mg/L	1605GWMMW018-U 1605GWMMW029-U 1605GWMMW033-U 1605GWMBW032-1-U

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

No field blanks were identified in this SDG.

IV. Laboratory Control Sample (LCS)

Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within the QC limits of 80-120% and relative percent differences (RPD) were within 20% limits.

V. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VI. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 90-110% (80-120% TDS) and relative percent differences (RPD) were within 20% limits (35% soils) with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
1605GWMMW018-FMS/MSD (1605GWMMW018-F 1605GWMMW029-F 1605GWMMW033-F 1605GWMBW032-1-F 1605GWMBW032-2-F 1605GWMMW017-F)	Sulfate	61 (90-110)	53 (90-110)	J- (all detects)	Α
1605SWMT066-FMS/MSD (1605GWMMW018-F 1605GWMMW029-F 1605GWMMW033-F 1605GWMBW032-1-F 1605GWMBW032-2-F 1605GWMBW037-F)	Sulfate	22 (90-110)	49 (90-110)	J- (all detects)	A

VII. Field Replicates

Field replicate samples were collected in duplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

VIII(a). Sample Result Verification

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

VIII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Wet Chemistry - Data Qualification Summary - SDG 10348356

Sample	Analyte	Flag	A or P	Reason (Code)
1605GWMMW018-F 1605GWMMW029-F 1605GWMMW033-F 1605GWMBW032-1-F 1605GWMBW032-2-F 1605GWMMW017-F	Sulfate	J- (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (16)

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 10348356

No Sample Data Qualified in this SDG

Wet Chemistry - Field Blank Data Qualification Summary - SDG 10348356

No Sample Data Qualified in this SDG

LDC #: 36509B6 SDG #: __10348356

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Reviewer:___ 2nd Reviewer: _____

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments	
l.	Sample receipt/Technical holding times	A	5/11/10	
Ш	Initial calibration	A		
111.	Calibration verification	A		
IV	Laboratory Blanks	SW		
V	Field blanks	2		
VI.	Matrix Spike/Matrix Spike Duplicates	Sw	MSD=1605SWHTOGO-FMSD (506:163483)	نهر
VII.	Duplicate sample analysis	A	MSD=1605SWHJOHO-FMSD (506:103483) DJP=1605SWHSGOO7-U(506:103483)	برز
VIII.	Laboratory control samples	4	LCS	
IX.	Field duplicates	N		
X.	Sample result verification	N		
ΧI	Overall assessment of data	4		

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank

D = Duplicate TB = Trip blank
EB = Equipment blank

SB=Source blank OTHER:

	Client ID		Lab ID	Matrix	Date
1	1605GWMMW018-U	5	10348356001	Water	05/11/16
2	1605GWMMW029-U		10348356003	Water	05/11/16
3	1605GWMMW033-U		10348356005	Water	05/11/16
4	1605GWMBW032+ -\- U		10348356007	Water	05/11/16
5	1605GWMBW032-4 - 2- U		10348356009	Water	05/11/16
6	1605GWMMW017-U	1	10348356012	Water	05/11/16
7	1605GWMMW018-F	,O ų	10348356002	Water	05/11/16
8	1605GWMMW029-F	1	10348356004	Water	05/11/16
9	1605GWMMW033-F		10348356006	Water	05/11/16
10	1605GWMBW032-F -\-[-		10348356008	Water	05/11/16
11	1605GWMBW032-F - Z-F		10348356010	Water	05/11/16
12	1605GWMMW017-F	4	10348356011	Water	05/11/16
13	1605GWMMW018-UDUP	<ds< td=""><td>10348356001DUP</td><td>Water</td><td>05/11/16</td></ds<>	10348356001DUP	Water	05/11/16
14	1605GWMMW018-FMS 504 3	65 50	10348356002MS	Water	05/11/16
15	1605GWMMW018-FMSD		10348356002MSD	Water	05/11/16
16					
17					

LDC #: 30851860

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: JD
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
(-6	pH (TDS)CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ ClO ₄
7-12	pH TDS CLF NO $_3$ NO $_2$ (SO $_4$)O-PO $_4$ Alk CN NH $_3$ TKN TOC Cr6+ ClO $_4$
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
QC:13	pH 7DS) CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC-14-15	pH TDS CI F NO3 NO2 SO2O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₂ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₂ TKN TOC Cr6+ ClO ₄

Comments:					
	 	 	 		

LDC #: 36509B6

VALIDATION FINDINGS WORKSHEET Blanks

Page: _ of _ Reviewer: _ 2nd Reviewer: ______

METHOD:Inorganics, Method See Cover

ICB/CCB

(mg/L)

25

PΒ

5.0

TDS

Conc. units	s: <u>mg/l</u>				Asso	ciated San	nples: <u>9</u>	(0)	 T-1-1-1		
Analyte	Blank ID	Blank ID	Blank					,			
	РВ	ICB/CCB (mg/L)	Action Limit	No Qualifiers							
SO4		0.44	2.2								
Conc. units: mg/L Associated Samples: 1-4											
Analyte	Biank ID	Blank iD	Blank								
			Action Limit								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

No Qualifiers

LDC #: 36509B6

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	Lof \
Reviewer:	20
2nd Reviewer:	a

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qual	ifications below for all questions answered "N". Not applicable questions are identified as "N/A".
/ <u>Y/N, N/A</u>	Was a matrix spike analyzed for each matrix in this SDG?
Y/N, N/A Y/N/ N/A	Were matrix spike percent recoveries (%R) within the control limits of 80-120? If the sample concentration exceeded the spike concentration by a facto

of 4 or more, no action was taken.

N N/A

Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

L #	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	14/15	W	SO4	61	53		7-12	J-/UJ/A (det) (16)
	1605SWMT066-F MS/D (SDG: 10348344)	W	SO4	22	49		7-12	J-/R/A (det) (16)
$\ -$								

comments:				 	 	
-	 			 		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Monsanto, P4 Production LLC

Report Date:

July 6, 2016

Matrix:

Water

Parameters:

Metals by ICPMS SW-846 Method 6020A

Validation Level:

Stage 2B

Laboratory:

Pace Analytical

Sample Delivery Group (SDG): 10348364

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMST019-U	05/09/16	10348364001
1605SWMST050-U	05/09/16	10348364003
1605SWMDS030-1-U	05/10/16	10348364005
1605SWMDS030-2-U	05/10/16	10348364007
1605SWMST092-U	05/10/16	10348364009
1605SWMST089-U	05/10/16	10348364011
1605SWMST090-U	05/10/16	10348364013
1605SWMST096-U	05/10/16	10348364015
1605SWMSG004-U	05/10/16	10348364017
1605SWMSG005-U	05/10/16	10348364019
1605SWMST094-U	05/10/16	10348364021
1605GWMMW026-U	05/10/16	10348364023
1605GWMMW021-U	05/10/16	10348364025
1605GWMMW006-U	05/10/16	10348364027
1605GWMW16A-U	05/10/16	10348364029
1605SWMST019-F	05/09/16	10348364002
1605SWMST050-F	05/09/16	10348364004
1605SWMDS030-1-F	05/10/16	10348364006
1605SWMDS030-2-F	05/10/16	10348364008
1605SWMST092-F	05/10/16	10348364010
1605SWMST089-F	05/10/16	10348364012
1605SWMST090-F	05/10/16	10348364014
1605SWMST096-F	05/10/16	10348364016
1605SWMSG004-F	05/10/16	10348364018
1605SWMSG005-F	05/10/16	10348364020

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMST094-F	05/10/16	10348364022
1605GWMMW026-F	05/10/16	10348364024
1605GWMMW021-F	05/10/16	10348364026
1605GWMMW006-F	05/10/16	10348364028
1605GWMW16A-F	05/10/16	10348364030
1605SWMST089-UMS	05/10/16	10348364011MS
1605SWMST089-UMSD	05/10/16	10348364011MSD
1605SWMST089-FMS	05/10/16	10348364012MS
1605SWMST089-FMSD	05/10/16	10348364012MSD
1605SWMSG005-UMS	05/10/16	10348364019MS
1605SWMSG005-UMSD	05/10/16	10348364019MSD
1605SWMSG005-FMS	05/10/16	10348364020MS
1605SWMST094-FMSD	05/10/16	10348364022MSD

Introduction

This data review covers 38 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA SW 846 Method noted below:

 Method 6020A ICPMS: Cadmium, Calcium, Magnesium, Manganese, and Selenium.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements were met: 6 months for water and soil (note NIST soil standard reference samples are valid for up to 3 years).

All samples were received intact with proper preservation (pH < 2 for water).

II. ICP-MS Tune Analysis

ICP MS Tuning was performed by the laboratory. All isotopes in the tuning solution mass resolution were within 0.1 amu. Resolutions are < 0.9 amu full width at 10% peak height (Level IV review only).

The percent relative standard deviations (%RSD) of all isotopes in the tuning solution were less than or equal to 5.0%.

III. Calibration

An initial calibration was performed each day of analysis. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

The low-level initial calibration verification (LLICV) and low-level continuing calibration verifications (LLCCVs) standard frequency and limits (70-130%) were met. Limit for manganese are 50 -150%. Only undetected data, or values < 2 x RL are qualified or impacted.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No metal contaminants were found in the initial, continuing and preparation blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Cadmium	0.028 ug/L	1605GWMMW026-U 1605GWMMW021-U 1605GWMMW006-U 1605GWMW16A-U

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
1605GWMMW021-U	Cadmium	0.061 ug/L	0.061U ug/L

No field blanks were identified in this SDG.

V. ICP-MS Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

ICP interference check samples were reviewed for each analyte as applicable. Percent recovery (%R) of the ICSAB were within the QC limits of 80-120%.

VI. Laboratory Control Sample (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VIII. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits (35% soils).

For 1605SWMSG005-UMS/MSD and 1605SWMSG005-FMS/MSD no data were qualified for Calcium and Magnesium percent recoveries outside the QC limits since the parent sample results were greater than 4X the spike concentration.

IX. ICP-MS Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria of $\pm 10\%$ difference for values greater than 50 times the lower limit of quantitation (i.e., the reporting limits [RLs]) were met.

X. ICP-MS Internal Standards

All internal standard percent recoveries (%R) were within 70-130% or a 2x dilution was run with acceptable recoveries

XI. Field Replicates

Field replicate samples were collected in triplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

XII(a). Sample Result Verification

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

XII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Metals - Data Qualification Summary - SDG 10348364

No Sample Data Qualified in this SDG

Metals - Laboratory Blank Data Qualification Summary - SDG 10348364

Sample	Analyte	Modified Final Concentration	A or P	Code
1605GWMMW021-U	Cadmium	0.061U ug/L	А	10

Metals - Field Blank Data Qualification Summary - SDG 10348364

No Sample Data Qualified in this SDG

LDC #:	36509C4D
SDG #:_	10348364

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

2nd Reviewer: c

METHOD: Metals (EPA SW 846 Method 6020A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
<u>I.</u>	Sample receipt/Technical holding times	A	5/9-10/10
II.	ICP/MS Tune	A	
III.	Instrument Calibration	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	Sw	
VI.	Field Blanks	7	
VII.	Matrix Spike/Matrix Spike Duplicates	Su	MGD = (31,32) (33,34) (35,36) (37,
VIII.	Duplicate sample analysis	N	
IX.	Serial Dilution	A	
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	2	
XII.	Internal Standard (ICP-MS)	A	
XIII.	Sample Result Verification	N	
XIV	Overall Assessment of Data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID		Lab ID	Matrix	Date
1	1605SWMST019-U	r L	10348364001	Water	05/09/16
2	1605SWMST050-U	1	10348364003	Water	05/09/16
3	1605SWMDS030-1-U		10348364005	Water	05/10/16
4	1605SWMDS030-2-U		10348364007	Water	05/10/16
5	1605SWMST092-U		10348364009	Water	05/10/16
6	1605SWMST089-U		10348364011	Water	05/10/16
7	1605SWMST090-U		10348364013	Water	05/10/16
8	1605SWMST096-U		10348364015	Water	05/10/16
9	1605SWMSG004-U		10348364017	Water	05/10/16
10	1605SWMSG005-U		10348364019	Water	05/10/16
11	1605SWMST094-U		10348364021	Water	05/10/16
12	1605GWMMW026-U		10348364023	Water	05/10/16
13	1605GWMMW021-U		10348364025	Water	05/10/16
14	1605GWMMW006-U		10348364027	Water	05/10/16
15	1605GWMW16A-U	7	10348364029	Water	05/10/16

LDC #:	36509C4
	10348364
Laborato	ry: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: <u>'7\\\\</u>	
Page: <u>2</u> of <u>2</u>	
Reviewer: 30	
2nd Reviewer:	

METHOD: Metals (EPA SW 846 Method 6020A)

	Client ID				Lab ID	Matrix	Date
16	1605SWMST019-F	Cásse	· Ca.	Ma	10348364002	Water	05/09/16
17	1605SWMST050-F		1	7	10348364004	Water	05/09/16
18	1605SWMDS030-1-F				10348364006	Water	05/10/16
19	1605SWMDS030-2-F				10348364008	Water	05/10/16
20	1605SWMST092-F				10348364010	Water	05/10/16
21	1605SWMST089-F		<u> </u>		10348364012	Water	05/10/16
22	1605SWMST090-F				10348364014	Water	05/10/16
23	1605SWMST096-F				10348364016	Water	05/10/16
24	1605SWMSG004-F				10348364018	Water	05/10/16
25	1605SWMSG005-F				10348364020	Water	05/10/16
26	1605SWMST094-F				10348364022	Water	05/10/16
27	1605GWMMW026-F		Se on	Jy	10348364024	Water	05/10/16
28	1605GWMMW021-F		1	<i></i>	10348364026	Water	05/10/16
29	1605GWMMW006-F				10348364028	Water	05/10/16
30	1605GWMW16A-F		, 1	1	10348364030	Water	05/10/16
31	1605SWMST089-UMS		18, M	,se	10348364011MS	Water	05/10/16
32	1605SWMST089-UMSD		7		10348364011MSD	Water	05/10/16
33	1605SWMST089-FMS	دم, د	a, Mg	عک,	10348364012MS	Water	05/10/16
34	1605SWMST089-FMSD		<u></u>)	10348364012MSD	Water	05/10/16
35	1605SWMSG005-UMS	Čà	, Min,	ςe	10348364019MS	Water	05/10/16
36	1605SWMSG005-UMSD				10348364019MSD	Water	05/10/16
37	#25 MS	C),C	a, Mg	Se			
38	#25 MSQ		<u>J</u>	-			
39							
40							
41							

NOCS.

LDC #: 3650-CUD

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: _of _ Reviewer: _\infty 2nd reviewer: _\infty

All circled elements are applicable to each sample.

Sample ID	Moteix	Target Analyte List (TAL)
	\	Larger Allaryte List (TAL)
27-30	ω	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
15-12	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn) Hg, Ni, K(Se) Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
16-20	W	Al, Sb, As, Ba, Be, Cd, Ca, Co, Cu, Fe, Pb/Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
li l		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC.35-36	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn) Hg, Ni, K/Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC:33-34	1.1	
GC 37-38	W	Al, Sb, As, Ba, Be (Cd)(Ca, Cr, Co, Cu, Fe, Pb (Mg) Mn, Hg, Ni, K(Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
[] }		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al. Sb. As. Ba. Be. Cd. Ca. Cr. Co. Cu. Fe. Pb. Mg. Mn. Hg. Ni. K. Se. Ag. Na. Tl. V. Zn. Mo. B. Sn. Ti.
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GEAA		Al, Sh, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Ph, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, 7n, Mo, B, Sn, Ti,

Comments: Mercury by CVAA if performed

LDC #: 36509C4

VALIDATION FINDINGS WORKSHEET Calibration

Page:_	<u>\</u> of \
Reviewer:	<i>QZ</i>
2nd Reviewer:	a

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "
--

Were all instruments calibrated daily, each set-up time, and were the proper number of standards used? N N/A

Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110% for all analytes except mercury (80-120%)?

LEVEL IV ONLY:

Y N N/A Was a midrange cyanide standard distilled?

Are all correlation coefficients ≥0.995? Y N N/A

Y N N/A Were recalculated results acceptable? See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.

#	Date	Calibration ID	Analyte	%R	Associated Samples	Qualification of Data
	05/24/16	CRDL (9:47)	Са	148.6 (70-130)	18-19	No Qual. (>2X RL) (9)
	05/24/16	CRDL (11:12	Ca	134.6 (70-130)	18-19	No Qual. (>2X RL) (9)

Comments:				 _			
-	 	 		 			_
	 ······································	 	 		 	 	

LDC #: 36509C4

VALIDATION FINDINGS WORKSHEET PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1 Reviewer: JD

METHOD: Metals (EPA SW 864 Method 6010/6020/7000) Sample Concentration units, unless otherwise noted:

Soil preparation factor applied:

Associated Samples: 12-15 ug/L (10) 2nd Reviewer:

							Sample in	lentineston.		
Analyte	Maximum PB ^a (mg/Kg)	PB ^a	Maximum ICB/CCB ^a (ug/l)		13					
Cd			0.028	0.14	0.061					

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note: a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 36509C4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	_(_of_\
Reviewer:	30
nd Reviewer:	9

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

P	tease see o	gualifications	below for all	questions answere	d "N". No	t applicable d	guestions are	e identified as "	N/A"
,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	9	DOI:011 101 011	queentie anomore	u	c applicable c	jacononio an	, idollidilod do	,,

Was a matrix spike analyzed for each matrix in this SDG?

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

 $\frac{(Y)N N/A}{(Y)N N/A}$ Were all duplicate sample relative percent differences (RPD) \leq 20% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	35/36	W	Ca	-625	-621		16-26	No Qual. (>4X)
			Mg	134	128			No Qual. (>4X)
Ш								
Ш	37/38		Ca	-372	-596		16-26	No Qual. (>4X)
			Mg	189				No Qual. (>4X)
$\Vdash \downarrow$								
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Comments:_	 	 	 	
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Monsanto, P4 Production LLC

Report Date: July 6, 2016

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2B

Laboratory: Pace Analytical

Sample Delivery Group (SDG): 10348364

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMST019-U	05/09/16	10348364001
1605SWMST050-U	05/09/16	10348364003
1605SWMDS030-1-U	05/10/16	10348364005
1605SWMDS030-2-U	05/10/16	10348364007
1605SWMST092-U	05/10/16	10348364009
1605SWMST089-U	05/10/16	10348364011
1605SWMST090-U	05/10/16	10348364013
1605SWMST096-U	05/10/16	10348364015
1605SWMSG004-U	05/10/16	10348364017
1605SWMSG005-U	05/10/16	10348364019
1605SWMST094-U	05/10/16	10348364021
1605GWMMW026-U	05/10/16	10348364023
1605GWMMW021-U	05/10/16	10348364025
1605GWMMW006-U	05/10/16	10348364027
1605GWMW16A-U	05/10/16	10348364029
1605SWMST019-F	05/09/16	10348364002
1605SWMST050-F	05/09/16	10348364004
1605SWMDS030-1-F	05/10/16	10348364006
1605SWMDS030-2-F	05/10/16	10348364008
1605SWMST092-F	05/10/16	10348364010
1605SWMST089-F	05/10/16	10348364012
1605SWMST090-F	05/10/16	10348364014
1605SWMST096-F	05/10/16	10348364016
1605SWMSG004-F	05/10/16	10348364018
1605SWMSG005-F	05/10/16	10348364020

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMST094-F	05/10/16	10348364022
1605GWMMW026-F	05/10/16	10348364024
1605GWMMW021-F	05/10/16	10348364026
1605GWMMW006-F	05/10/16	10348364028
1605GWMW16A-F	05/10/16	10348364030
1605SWMST089-UDUP	05/10/16	10348364011DUP
1605SWMST089-FMS	05/10/16	10348364012MS
1605SWMST089-FMSD	05/10/16	10348364012MSD
1605SWMSG005-UDUP	05/10/16	10348364019DUP
1605SWMSG005-FMS	05/10/16	10348364020MS
1605SWMSG005-FMSD	05/10/16	10348364020MSD

Introduction

This data review covers 36 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the methods noted below:

 EPA Method 300.0 for Sulfate and Standard Method 2540C for Total Dissolved Solids.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements (28 days for method 300.0 and 7 days for method 2540C) were met.

All samples were received intact (preserved as required according to each method).

II. Calibration

An initial calibration was performed each day of analysis. The blank plus 6 standard curve produced a coefficient of determination (r^2) of > 0.990. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Total dissolved solids	5.0 mg/L	1605SWMSG005-U 1605GWMMW006-U 1605GWMW16A-U

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

No field blanks were identified in this SDG.

IV. Laboratory Control Sample (LCS)

Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within the QC limits of 80-120% and relative percent differences (RPD) were within 20% limits.

V. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

Total Dissolved Solid results were outside the QC limits; although the results were outside control limits, client samples were not qualified because it is unknown whether the non-client sample (10348093002) is representative of client's sample matrix.

VI. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 90-110% (80-120% TDS) and relative percent differences (RPD) were within 20% limits (35% soils) with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
1605SWMST089-FMS/MSD (1605SWMST019-F 1605SWMST050-F 1605SWMDS030-1-F 1605SWMST092-F 1605SWMST092-F 1605SWMST099-F 1605SWMST090-F 1605SWMSG004-F 1605SWMSG005-F 1605SWMSG005-F 1605SWMST094-F 1605GWMMW026-F 1605GWMMW021-F 1605GWMMW006-F 1605GWMMW006-F	Sulfate	67 (90-110)	63 (90-110)	J- (all detects)	A

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
1605SWMSG005-FMS/MSD (1605SWMST019-F 1605SWMST050-F 1605SWMDS030-1-F 1605SWMDS030-2-F 1605SWMST092-F 1605SWMST099-F 1605SWMST090-F 1605SWMST096-F 1605SWMSG004-F 1605SWMSG005-F 1605SWMSG005-F 1605SWMST094-F 1605GWMMW026-F 1605GWMMW021-F 1605GWMMW021-F 1605GWMMW006-F 1605GWMMW006-F	Sulfate	43 (90-110)	66 (90-110)	J- (all detects)	A

VII. Field Replicates

Field replicate samples were collected in duplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

VIII(a). Sample Result Verification

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

VIII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Wet Chemistry - Data Qualification Summary - SDG 10348364

Sample	Analyte	Flag	A or P	Reason (Code)
1605SWMST019-F 1605SWMST050-F 1605SWMDS030-1-F 1605SWMDS030-2-F 1605SWMST092-F 1605SWMST089-F 1605SWMST090-F 1605SWMST090-F 1605SWMSG004-F 1605SWMSG005-F 1605SWMSG005-F 1605GWMMW026-F 1605GWMMW026-F 1605GWMMW021-F 1605GWMMW021-F 1605GWMMW021-F 1605GWMMW08-F	Sulfate	J- (all detects)	Α	Matrix spike/Matrix spike duplicate (%R) (16)

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 10348364

No Sample Data Qualified in this SDG

Wet Chemistry - Field Blank Data Qualification Summary - SDG 10348364

No Sample Data Qualified in this SDG

LDC #:	36509C6	
SDG #:_	10348364	

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: <u>ついい</u>
Page: <u></u> of <u></u> ∠
Reviewer: SS
2nd Reviewer:

AND SHOC METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	5/9-10/16
11	Initial calibration	A	· ·
111.	Calibration verification	A	
ΙV	Laboratory Blanks	SW	
V	Field blanks	\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	
VI.	Matrix Spike/Matrix Spike Duplicates	SW	MGD=(32,33) (35,36)
VII.	Duplicate sample analysis	SW	DUP
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	2	
X.	Sample result verification	N	
Xi	Overall assessment of data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank
EB = Equipment blank

SB=Source blank

OTHER:

	T			
	Client ID	Lab ID	Matrix	Date
1	1605SWMST019-U	10348364001	Water	05/09/16
2	1605SWMST050-U	10348364003	Water	05/09/16
3	1605SWMDS030-1-U	10348364005	Water	05/10/16
4	1605SWMDS030-2-U	10348364007	Water	05/10/16
5	1605SWMST092-U	10348364009	Water	05/10/16
6	1605SWMST089-U	10348364011	Water	05/10/16
7	1605SWMST090-U	10348364013	Water	05/10/16
8	1605SWMST096-U	10348364015	Water	05/10/16
9	1605SWMSG004-U	10348364017	Water	05/10/16
10	1605SWMSG005-U	10348364019	Water	05/10/16
11	1605SWMST094-U	10348364021	Water	05/10/16
12	1605GWMMW026-U	10348364023	Water	05/10/16
13	1605GWMMW021-U	10348364025	Water	05/10/16
14	1605GWMMW006-U	10348364027	Water	05/10/16
15	1605GWMW16A-U	10348364029	Water	05/10/16
16	1605SWMST019-F	10348364002	Water	05/09/16
17	1605SWMST050-F	10348364004	Water	05/09/16

LDC #:_	36509C6
SDG #:_	10348364
Laborat	ory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 71/14
Page: 2 of 2
Reviewer: SO
2nd Reviewer:

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

	Client ID		Lab ID	Matrix	Date
18	1605SWMDS030-1-F	504	10348364006	Water	05/10/16
19	1605SWMDS030-2-F		10348364008	Water	05/10/16
20	1605SWMST092-F		10348364010	Water	05/10/16
21	1605SWMST089-F		10348364012	Water	05/10/16
22	1605SWMST090-F		10348364014	Water	05/10/16
23	1605SWMST096-F		10348364016	Water	05/10/16
24	1605SWMSG004-F		10348364018	Water	05/10/16
25	1605SWMSG005-F		10348364020	Water	05/10/16
26	1605SWMST094-F		10348364022	Water	05/10/16
27	1605GWMMW026-F		10348364024	Water	05/10/16
28	1605GWMMW021-F		10348364026	Water	05/10/16
29	1605GWMMW006-F		10348364028	Water	05/10/16
30	1605GWMW16A-F	4	10348364030	Water	05/10/16
31	1605SWMST089-UDUP	705	10348364011DUP	Water	05/10/16
32	1605SWMST089-FMS	Sar	10348364012MS	Water	05/10/16
33	1605SWMST089-FMSD	<u></u>	10348364012MSD	Water	05/10/16
34	1605SWMSG005-UDUP	705	10348364019DUP	Water	05/10/16
35	1605SWMSG005-FMS	S04	10348364020MS	Water	05/10/16
36	1605SWMSG005-FMSD	<u></u>	10348364020MSD	Water	05/10/16
37					
38					
39					
40					
41					

Notes:

LDC #: 36509CLP

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: <u>1</u>	_of1_
Reviewer:	JD
2nd reviewer:_	

All circled methods are applicable to each sample.

Sample ID	Parameter
1-15	PH (TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
lb-30	PH TDS CI F NO3 NO2 SO4O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
QC: 31,34	PH (TDS) CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
L 32-55 L-35-30	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS_CI_F_NO3_NO2_SO4_O-PO4_AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	DH_TDS_CLF_NO ₂ _NO ₂ _SO ₄ _O-PO ₄ _Alk_CN_NH ₂ _TKN_TOC_Cr6+_ClO ₄

Comments:					
•			 		

LDC #: 36509C6

VALIDATION FINDINGS WORKSHEET Blanks

Page: _of_\
Reviewer: 50
2nd Reviewer:

METHOD:Inorganics, Method See Cover

Conc. units: mg/L Associated Samples: 10, 14-15

Analyte	Blank ID	Blank ID	Blank				 		
	PB	ICB/CCB (mg/L)	Action Limit	No Qualifiers			-		
TDS	5.0		25						

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 36509C6

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

	Page:_	of
	Reviewer:	QC
2nd	Reviewer:	9_

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a matrix spike analyzed for each matrix in this SDG?

Were matrix spike percent recoveries (%R) within the control limits of 80-120? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

<u>YN N/A</u> Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples?

LEVEL IV ONLY:

A/N/A

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD.ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	32/33	W	SO4	67	63		16-30	J-/UJ/A (det) (16)
	35/36	W	SO4	43	66		16-30	J-/UJ/A (det) (16)
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$\ \cdot\ $								
Ш		<u></u> .						

Comments:	 		 	
	 	 	 	

LDC #: 36509C6

VALIDATION FINDINGS WORKSHEET Duplicate Analysis

Page:_	<u>(</u> of
Reviewer:_	JD.
2nd Reviewer:_	۹_

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y/N N/A

Was a duplicate sample analyzed for each matrix in this SDG?

Y/N/N/A

Were all duplicate sample relative percent differences (RPD) < 2

Were all duplicate sample relative percent differences (RPD) \leq 20% for water samples and \leq 35% for soil samples? If no, see qualifications below. A control limit of \pm R.L. (\pm 2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (I imits)	Difference (Limits)	Associated Samples	Qualifications
		10348093002DUP (non client sample)	W	TDS	26 (<u><</u> 10)		10, 14-15	No Qual. (non client sample)
Н								
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Comments:	 	 	 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Monsanto, P4 Production LLC

Report Date:

July 6, 2016

Matrix:

Water

Parameters:

Metals by ICPMS SW-846 Method 6020A

Validation Level:

Stage 2B

Laboratory:

Pace Analytical

Sample Delivery Group (SDG): 10348833

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMST132-1-U	05/13/16	10348833001
1605SWMST132-2-U	05/13/16	10348833003
1605SWMST131-U	05/13/16	10348833005
1605SWMST128-U	05/13/16	10348833007
1605SWMST143-U	05/13/16	10348833009
1605SWMST274-U	05/13/16	10348833011
1605SWMST133-U	05/13/16	10348833013
1605SWMST144-U	05/13/16	10348833015
1605SWMDS025-U	05/13/16	10348833017
1605SWMDS026-U	05/13/16	10348833019
1605GWMBW087-U	05/14/16	10348833021
1605GWMBW085-U	05/14/16	10348833023
1605GWMBW048-U	05/14/16	10348833025
1605GWMBW131-U	05/14/16	10348833027
1605GWMBW135-U	05/14/16	10348833029
1605GWMMW034-1-U	05/14/16	10348833031
1605GWMMW034-1-F	05/14/16	10348833032
1605SWMST132-1-F	05/13/16	10348833002
1605SWMST132-2-F	05/13/16	10348833004
1605SWMST131-F	05/13/16	10348833006
1605SWMST128-F	05/13/16	10348833008
1605SWMST143-F	05/13/16	10348833010
1605SWMST274-F	05/13/16	10348833012
1605SWMST133-F	05/13/16	10348833014
1605SWMST144-F	05/13/16	10348833016

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMDS025-F	05/13/16	10348833018
1605SWMDS026-F	05/13/16	10348833020
1605GWMBW087-F	05/14/16	10348833022
1605GWMBW085-F	05/14/16	10348833024
1605GWMBW048-F	05/14/16	10348833026
1605GWMBW131-F	05/14/16	10348833028
1605GWMBW135-F	05/14/16	10348833030

Introduction

This data review covers 32 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA SW 846 Method noted below:

 Method 6020A ICPMS: Cadmium, Calcium, Magnesium, Manganese, and Selenium.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements were met: 6 months for water and soil (note NIST soil standard reference samples are valid for up to 3 years).

All samples were received intact with proper preservation (pH < 2 for water).

II. ICP-MS Tune Analysis

ICP MS Tuning was performed by the laboratory. All isotopes in the tuning solution mass resolution were within 0.1 amu. Resolutions are < 0.9 amu full width at 10% peak height (Level IV review only).

The percent relative standard deviations (%RSD) of all isotopes in the tuning solution were less than or equal to 5.0%.

III. Calibration

An initial calibration was performed each day of analysis. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

The low-level initial calibration verification (LLICV) and low-level continuing calibration verifications (LLCCVs) standard frequency and limits (70-130%) were met. Limit for manganese are 50 -150%. Only undetected data, or values < 2 x RL are qualified or impacted.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No metal contaminants were found in the initial, continuing and preparation blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Cadmium	0.024 ug/L	1605SWMST132-1-F 1605SWMST132-2-F 1605SWMST131-F 1605SWMST128-F

Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Cadmium	0.020 ug/L	1605SWMST143-F 1605SWMST274-F 1605SWMST133-F 1605SWMST144-F 1605SWMDS025-F
ICB/CCB	Cadmium	0.028 ug/L	1605SWMDS026-F
ICB/CCB	Cadmium	0.023 ug/L	1605GWMBW087-U 1605GWMBW085-U 1605GWMBW048-U 1605GWMBW131-U 1605GWMBW135-U 1605GWMMW034-1-U

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
1605SWMST132-1-F	Cadmium	0.030 ug/L	0.030U ug/L
1605SWMST131-F	Cadmium	0.019 ug/L	0.019U ug/L
1605SWMST143-F	Cadmium	0.087 ug/L	0.087J+ ug/L
1605SWMST274-F	Cadmium	0.016 ug/L	0.016U ug/L
1605SWMST133-F	Cadmium	0.025 ug/L	0.025U ug/L
1605SWMST144-F	Cadmium	0.065 ug/L	0.065U ug/L
1605GWMBW087-U	Cadmium	0.038 ug/L	0.038U ug/L
1605GWMBW085-U	Cadmium	0.015 ug/L	0.015U ug/L
1605GWMBW135-U	Cadmium	0.028 ug/L	0.028U ug/L

No field blanks were identified in this SDG.

V. ICP-MS Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

ICP interference check samples were reviewed for each analyte as applicable. Percent recovery (%R) of the ICSAB were within the QC limits of 80-120%.

VI. Laboratory Control Sample (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VIII. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits (35% soils).

For 1605GWMMW036-FMS/MSD (from SDG 10348833) no data were qualified for Calcium and Magnesium percent recoveries outside the QC limits since the parent sample results were greater than 4X the spike concentration.

IX. ICP-MS Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria of $\pm 10\%$ difference for values greater than 50 times the lower limit of quantitation (i.e., the reporting limits [RLs]) were met.

X. ICP-MS Internal Standards

All internal standard percent recoveries (%R) were within 70-130% or a 2x dilution was run with acceptable recoveries

XI. Field Replicates

Field replicate samples were collected in triplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

XII(a). Sample Result Verification

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

XII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Metals - Data Qualification Summary - SDG 10348833

No Sample Data Qualified in this SDG

Metals - Laboratory Blank Data Qualification Summary - SDG 10348833

Sample	Analyte	Modified Final Concentration	A or P	Code
1605SWMST132-1-F	Cadmium	0.030U ug/L	Α	10
1605SWMST131-F	Cadmium	0.019U ug/L	Α	10
1605SWMST143-F	Cadmium	0.087J+ ug/L	Α	10
1605SWMST274-F	Cadmium	0.016U ug/L	Α	10
1605SWMST133-F	Cadmium	0.025U ug/L	А	10
1605SWMST144-F	Cadmium	0.065U ug/L	Α	10
1605GWMBW087-U	Cadmium	0.038U ug/L	Α	10
1605GWMBW085-U	Cadmium	0.015U ug/L	Α	10
1605GWMBW135-U	Cadmium	0.028U ug/L	А	10

Metals - Field Blank Data Qualification Summary - SDG 10348833

No Sample Data Qualified in this SDG

LDC #:	36509D4 9
SDG #:	10348833
Laborato	ry: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET Stage 2B

Page: _\ of _
Reviewer: _
2nd Reviewer: _

METHOD: Metals (EPA SW 846 Method 6020A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	5/13-14/16
11.	ICP/MS Tune	A	
111.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	MSO = SW
VIII.	Duplicate sample analysis	<u>N</u>	
IX.	Serial Dilution	A	
Х.	Laboratory control samples	A	ندح
XI.	Field Duplicates	N	
XII.	Internal Standard (ICP-MS)	A	
XIII.	Sample Result Verification	N	
XIV	Overall Assessment of Data	A	

Note: A

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID		Lab ID	Matrix	Date
1	1605SWMST132-1-U	Se	10348833001	Water	05/13/16
2	1605SWMST132-2-U		10348833003	Water	05/13/16
3	1605SWMST131-U		10348833005	Water	05/13/16
4	1605SWMST128-U		10348833007	Water	05/13/16
5	1605SWMST143-U		10348833009	Water	05/13/16
6	1605SWMST274-U		10348833011	Water	05/13/16
7	1605SWMST133-U		10348833013	Water	05/13/16
8	1605SWMST144-U		10348833015	Water	05/13/16
9	1605SWMDS025-U		10348833017	Water	05/13/16
10	1605SWMDS026-U	4	10348833019	Water	05/13/16
11	1605GWMBW087-U -	Ca, Mr. Se	10348833021	Water	05/14/16
12	1605GWMBW085-U	i	10348833023	Water	05/14/16
13	1605GWMBW048-U		10348833025	Water	05/14/16
14	1605GWMBW131-U		10348833027	Water	05/14/16
15	1605GWMBW135-U	4	10348833029	Water	05/14/16

LDC #:	36509D4a)
SDG #:_	10348833
Laborato	ry: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Page: Zof Z Reviewer: SS 2nd Reviewer: _____

METHOD: Metals (EPA SW 846 Method 6020A)

	Client ID			Lab ID	Matrix	Date
16	1605GWMMW034-1-U	(Se only) Cd. Se, Ca, Mg		10348833031	Water	05/14/16
17	1605GWMMW034-1-F	(Seonly) Cd. Se, (Ca, Ma	10348833032	Water	05/14/16
18	1605SWMST132-1-F			10348833002	Water	05/13/16
19	1605SWMST132-2-F			10348833004	Water	05/13/16
20	1605SWMST131-F			10348833006	Water	05/13/16
21	1605SWMST128-F			10348833008	Water	05/13/16
22	1605SWMST143-F			10348833010	Water	05/13/16
23	1605SWMST274-F			10348833012	Water	05/13/16
24	1605SWMST133-F	· · · · · · · · · · · · · · · · · · ·		10348833014	Water	05/13/16
25	1605SWMST144-F			10348833016	Water	05/13/16
26	1605SWMDS025-F			10348833018	Water	05/13/16
27	1605SWMDS026-F			10348833020	Water	05/13/16
28_	1605GWMBW087-F -		1 seonly	10348833022	Water	05/14/16
29	1605GWMBW085-F			10348833024	Water	05/14/16
30	1605GWMBW048-F			10348833026	Water	05/14/16
31	1605GWMBW131-F			10348833028	Water	05/14/16
32	1605GWMBW135-F			10348833030	Water	05/14/16
33			4			
34						
35						
36						
37						

Notes:_____

LDC #: 3650904b

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: of Reviewer: 200 2nd reviewer:

All circled elements are applicable to each sample.

 -		
	l	
Sample ID	<u> Matrix</u>	Target Analyte List (TAL)
1-10,17,	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
11-16	W	Al, Sb, As, Ba, Be, Cd)Ca, Cr, Co, Cu, Fe, Pb, Mg/Mn, Hg, Ni, K/Se)Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
18-27	ω	Al, Sb, As, Ba, Be Cd Ca, Cr, Co, Cu, Fe, Pb Mg Mn, Hg, Ni, K Se Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Ti, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
1		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Ti, V, Zn, Mo, B, Sn, Ti,

Comments: Mercury by CVAA if performed

LDC #: 36509D4a

VALIDATION FINDINGS WORKSHEET PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1 Reviewer: 2nd Reviewer:

METHOD: Metals (EPA SW 864 Method 6010/6020/7000) Sample Concentration units, unless otherwise noted:

Soil preparation factor applied: ua/l

(15) Associated Samples: 18-21

Cample C	oncentiatio	n units, unit	COO UNICIWI	oc notcu	ug/i		_ Associated	Campico	10-21		 	
	/ (b) [3]						******		sample II	ientification		
Analyte	Maximum PB ^a (mg/Kg)	PBª	Maximum ICB/CCB ^a		18	20						
Cd			0.024	0.12	0.030	0.019						

Sample Concentration units, unless otherwise noted: Associated Samples: 22-26 ug/L Sample Identification Maximum Blank 22 23 Analyte Maximum Maximum 24 25 PBª PB^a ICB/CCB^a Action (ma/Ka) (ua/L) (ua/L) Limit 0.025 0.020 0.087J+ 0.016 0.065

Sample C	oncentratio	n units, unl	ess otherwi	se noted: _	ug/L	Associated Samples:	27	(0)	
30.0							Sample	Identification	
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (ug/L)		No Qual.				
Cd			0.028	0.14					

		COS OLITICI WI	se noted: _	ug/		Associated	Samples:	<u>11-16</u>	(10)				
								Sample	lemilite au	n e e	ere e	4.4	
Analyte Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (ug/L)		11	12	15	16						

0.028

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note: a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

0.038

0.023

0.015

LDC #: 36509D4a

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: _of_ Reviewer: _\omega_ 2nd Reviewer: _\omega_

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

PI	ease see o	ualifications	below for all of	questions answered	"N". Not	applicable c	uestions a	re identified as	"N/A".

Ý/ N N/A Was a matrix spike analyzed for each matrix in this SDG?

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

 $\sqrt{N_N/A}$ Were all duplicate sample relative percent differences (RPD) \leq 20% for samples?

LEVEL IV ONLY:

/N) <u>N/A</u>

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

L #	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	1605GWMMW036- FMS/D (SDG: 10348833)		Са	177	178		18-27	No Qual. (>4X)
			Mg		127			No Qual. (>4X)
 								
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\vdash	<u> </u>	<u> </u>	<u> </u>		<u> </u>			
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Comments:	MS/D: 1605GWMMW036-UMS/D (SDG: 10348833)		
	1605GWMMW018-FMS/D (SDG: 10348356)		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Monsanto, P4 Production LLC

Report Date:

July 6, 2016

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2B

Laboratory:

Pace Analytical

Sample Delivery Group (SDG): 10348833

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMST132-1-U	05/13/16	10348833001
1605SWMST132-2-U	05/13/16	10348833003
1605SWMST131-U	05/13/16	10348833005
1605SWMST128-U	05/13/16	10348833007
1605SWMST143-U	05/13/16	10348833009
1605SWMST274-U	05/13/16	10348833011
1605SWMST133-U	05/13/16	10348833013
1605SWMST144-U	05/13/16	10348833015
1605SWMDS025-U	05/13/16	10348833017
1605SWMDS026-U	05/13/16	10348833019
1605GWMBW087-U	05/14/16	10348833021
1605GWMBW085-U	05/14/16	10348833023
1605GWMBW048-U	05/14/16	10348833025
1605GWMBW131-U	05/14/16	10348833027
1605GWMBW135-U	05/14/16	10348833029
1605GWMMW034-1-U	05/14/16	10348833031
1605GWMMW034-1-F	05/14/16	10348833032
1605SWMST132-1-F	05/13/16	10348833002
1605SWMST132-2-F	05/13/16	10348833004
1605SWMST131-F	05/13/16	10348833006
1605SWMST128-F	05/13/16	10348833008
1605SWMST143-F	05/13/16	10348833010
1605SWMST274-F	05/13/16	10348833012
1605SWMST133-F	05/13/16	10348833014
1605SWMST144-F	05/13/16	10348833016

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMDS025-F	05/13/16	10348833018
1605SWMDS026-F	05/13/16	10348833020
1605GWMBW087-F	05/14/16	10348833022
1605GWMBW085-F	05/14/16	10348833024
1605GWMBW048-F	05/14/16	10348833026
1605GWMBW131-F	05/14/16	10348833028
1605GWMBW135-F	05/14/16	10348833030
1605GWMBW087-FMS	05/14/16	10348833022MS
1605GWMBW087-FMSD	05/14/16	10348833022MSD

Introduction

This data review covers 34 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the methods noted below:

 EPA Method 300.0 for Sulfate and Standard Method 2540C for Total Dissolved Solids.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements (28 days for method 300.0 and 7 days for method 2540C) were met.

All samples were received intact (preserved as required according to each method).

II. Calibration

An initial calibration was performed each day of analysis. The blank plus 6 standard curve produced a coefficient of determination (r^2) of > 0.990. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Sulfate	0.44 mg/L	1605SWMST132-1-F 1605SWMST132-2-F 1605SWMST131-F 1605SWMST128-F 1605SWMST143-F 1605SWMST274-F 1605SWMST273-F

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
1605SWMST143-F	Sulfate	1.4 mg/L	1.4J+ mg/L

No field blanks were identified in this SDG.

IV. Laboratory Control Sample (LCS)

Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within the QC limits of 80-120% and relative percent differences (RPD) were within 20% limits.

V. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VI. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 90-110% (80-120% TDS) and relative percent differences (RPD) were within 20% limits (35% soils) with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
1605GWMMW018-FMS/MSD (1605SWMST132-1-F 1605SWMST132-2-F 1605SWMST131-F 1605SWMST128-F 1605SWMST143-F 1605SWMST274-F 1605SWMST33-F 1605SWMST144-F 1605SWMST144-F 1605SWMDS025-F 1605SWMDS026-F)	Sulfate	61 (90-110)	53 (90-110)	J- (all detects)	A
1605SWMT066-FMS/MSD (1605SWMST132-1-F 1605SWMST132-2-F 1605SWMST131-F 1605SWMST128-F 1605SWMST143-F 1605SWMST274-F 1605SWMST133-F 1605SWMST133-F 1605SWMST144-F 1605SWMDS025-F 1605SWMDS026-F)	Sulfate	22 (90-110)	49 (90-110)	J- (all detects)	A

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
1605GWMMW007-FMS/MSD (1605GWMMW034-1-F 1605GWMBW087-F 1605GWMBW085-F 1605GWMBW048-F 1605GWMBW131-F 1605GWMBW135-F)	Sulfate	70 (90-110)	70 (90-110)	J- (all detects)	A
1605GWMBW087-FMS/MSD (1605GWMMW034-1-F 1605GWMBW087-F 1605GWMBW085-F 1605GWMBW048-F 1605GWMBW131-F 1605GWMBW135-F)	Sulfate	84 (90-110)	82 (90-110)	J- (all detects)	А

VII. Field Replicates

Field replicate samples were collected in duplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

VIII(a). Sample Result Verification

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

VIII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Wet Chemistry - Data Qualification Summary - SDG 10348833

Sample	Analyte	Flag	A or P	Reason (Code)
1605GWMMW034-1-F 1605SWMST132-1-F 1605SWMST132-2-F 1605SWMST131-F 1605SWMST128-F 1605SWMST143-F 1605SWMST274-F 1605SWMST133-F 1605SWMST144-F 1605SWMDS025-F 1605SWMDS026-F 1605GWMBW087-F 1605GWMBW085-F 1605GWMBW085-F 1605GWMBW048-F 1605GWMBW048-F 1605GWMBW048-F	Sulfate	J- (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (16)

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 10348833

Sample	Analyte	Modified Final Concentration	A or P	Code
1605SWMST143-F	Sulfate	1.4J+ mg/L	А	10

Wet Chemistry - Field Blank Data Qualification Summary - SDG 10348833

No Sample Data Qualified in this SDG

LDC #:	36509D6	
SDG #:	10348833	

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: Thu	
Page: <u>\</u> of <u>2</u>	
Reviewer:	
2nd Reviewer:	

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 460.1)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	5/13/10 -5/14/10
	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	7	
VI.	Matrix Spike/Matrix Spike Duplicates	SW	
VII.	Duplicate sample analysis	A	DUR= 16056WMHW007-UDUR (SDG: 10348
VIII.	Laboratory control samples	A	LCS
iX.	Field duplicates	2	
X.	Sample result verification	N	
ΧI	Overall assessment of data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank
EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	1605SWMST132-1-U	10348833001	Water	05/13/16
2	1605SWMST132-2-U	10348833003	Water	05/13/16
3	1605SWMST131-U	10348833005	Water	05/13/16
4	1605SWMST128-U	10348833007	Water	05/13/16
5	1605SWMST143-U	10348833009	Water	05/13/16
6	1605SWMST274-U	10348833011	Water	05/13/16
7	1605SWMST133-U	10348833013	Water	05/13/16
8	1605SWMST144-U	10348833015	Water	05/13/16
9	1605SWMDS025-U	10348833017	Water	05/13/16
10	1605SWMDS026-U	10348833019	Water	05/13/16
11	1605GWMBW087-U	10348833021	Water	05/14/16
12	1605GWMBW085-U	10348833023	Water	05/14/16
13	1605GWMBW048-U	10348833025	Water	05/14/16
14	1605GWMBW131-U	10348833027	Water	05/14/16
15	1605GWMBW135-U	10348833029	Water	05/14/16
16	1605GWMMW034-1-U	10348833031	Water	05/14/16
17	1605GWMMW034-1-F	10348833032	Water	05/14/16

LDC #: 36509D6 SDG #: 10348833

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Page: ZofZ Reviewer: SS 2nd Reviewer:

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

	Client ID		Lab ID	Matrix	Date
18	1605SWMST132-1-F	504	10348833002	Water	05/13/16
19	1605SWMST132-2-F		10348833004	Water	05/13/16
20	1605SWMST131-F		10348833006	Water	05/13/16
21	1605SWMST128-F		10348833008	Water	05/13/16
22	1605SWMST143-F		10348833010	Water	05/13/16
23	1605SWMST274-F		10348833012	Water	05/13/16
24	1605SWMST133-F		10348833014	Water	05/13/16
25	1605SWMST144-F		10348833016	Water	05/13/16
26	1605SWMDS025-F		10348833018	Water	05/13/16
27	1605SWMDS026-F		10348833020	Water	05/13/16
28	1605GWMBW087-F		10348833022	Water	05/14/16
29	1605GWMBW085-F		10348833024	Water	05/14/16
30	1605GWMBW048-F		10348833026	Water	05/14/16
31	1605GWMBW131-F		10348833028	Water	05/14/16
32	1605GWMBW135-F	4	10348833030	Water	05/14/16
33	1605GWMBW087-FMS	300	10348833022MS	Water	05/14/16
34	1605GWMBW087-FMSD	<u> </u>	10348833022MSD	Water	05/14/16
35					
36					
37					
38					
39					

Notes:		

LDC #: 3680106

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:	<u>1_</u> of1_
Reviewer:	JD
2nd reviewer:	_0

All circled methods are applicable to each sample.

Sample ID	Parameter
1-10	pH (TDS) CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
(7-32	PH TDS CI F NO3 NO2 SO O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SQ ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC:33-34	pH TDS CI F NO3 NO2 SO4O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
į	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	PH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	PH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLE NO ₂ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₂ TKN TOC Cr6+ ClO ₄

Comments:						
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LDC #: 36509D6

VALIDATION FINDINGS WORKSHEET Blanks

Page:_	of_	<u>\</u>
Reviewer:	`ت`	\bigcirc
2nd Reviewer:	0	1

METHOD:Inorganics, Method See Cover

Conc. units	s: <u>mg/L</u>				Asso	ociated Sar	nples: <u>18</u>	3-24 (ic	ာ	 	
Analyte	Blank ID	Blank ID	Blank							 ···	
	РВ	ICB/CCB (mg/L)	Action Limit	22							
SO4		0.44	2.2	1.4J+							

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 36509D6

VALIDATION FINDINGS WORKSHEET <u>Matrix Spike/Matrix Spike Duplicates</u>

Page: of Reviewer: 2nd Reviewer:

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

mease see	qualifications below for all questions answered. No. Not applicable questions are identified as INA.
N/A N/A	Was a matrix spike analyzed for each matrix in this SDG?
Y/N DN/A	Were matrix spike percent recoveries (%R) within the control limits of 80 120? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

Vere all duplicate sample relative percent differences (RPD) ≤ 20% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1605GWMMW018- F MS/D (SDG: 10348356)	W	SO4	61	53		18-27	J-/UJ/A (det) (16)
1605SWMT066-F MS/D (SDG: 10348344)	W	SO4	22	49		18-27	J-/R/A (det) (16)
1605GWMMW007- FMS/D (SDG; 10348839)	W	SO4	70	70		17, 28-32	J-/UJ/A (det) (16)
33/34	W	SO4	84	82		17, 28-32	J-/UJ/A (det) (16)

Comments:	 	 	 		
	 	 	 	 	_

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Monsanto, P4 Production LLC

Report Date: July 6, 2016

Matrix: Water

Parameters: Metals by ICPMS SW-846 Method 6020A

Validation Level: Stage 2B

Laboratory: Pace Analytical

Sample Delivery Group (SDG): 10348839

Sample Identification	Collection Date	Laboratory Sample Identification
1605GWMBW130-U	05/15/16	10348839001
1605GWMBW027-U	05/15/16	10348839003
1605GWMBW028-U	05/15/16	10348839005
1605GWMBW011-U	05/15/16	10348839007
1605GWMBW009-U	05/15/16	10348839009
1605GWMMW025-U	05/14/16	10348839012
1605GWMBW099-U	05/14/16	10348839014
1605GWMMW024-U	05/14/16	10348839016
1605GWMMW013-U	05/14/16	10348839018
1605GWMMW034-2-U	05/14/16	10348839020
1605GWMMW031-U	05/13/16	10348839023
1605GWMMW007-U	05/14/16	10348839025
1605GWMMW009-U	05/13/16	10348839027
1605GWMMW027-U	05/13/16	10348839029
1605GWMMW035-U	05/13/16	10348839031
1605GWMMW037-1-U	05/13/16	10348839033
1605GWMMW037-2-U	05/13/16	10348839035
1605GWMMW036-U	05/13/16	10348839037
1605GWMMW032-U	05/15/16	10348839039
1605GWMMW020-U	05/15/16	10348839041
1605GWMW15A-U	05/15/16	10348839043
1605GWMMW030-U	05/15/16	10348839045
1605GWMBW006-U	05/15/16	10348839047
1605GWMBW130-F	05/15/16	10348839002
1605GWMBW027-F	05/15/16	10348839004

Sample Identification	Collection Date	Laboratory Sample Identification
1605GWMBW028-F	05/15/16	10348839006
1605GWMBW011-F	05/15/16	10348839008
1605GWMBW009-F	05/15/16	10348839010
1605GWMMW025-F	05/14/16	10348839011
1605GWMBW099-F	05/14/16	10348839013
1605GWMMW024-F	05/14/16	10348839015
1605GWMMW013-F	05/14/16	10348839017
1605GWMMW034-2-F	05/14/16	10348839019
1605GWMMW031-F	05/13/16	10348839022
1605GWMMW007-F	05/14/16	10348839024
1605GWMMW009-F	05/13/16	10348839026
1605GWMMW027-F	05/13/16	10348839028
1605GWMMW035-F	05/13/16	10348839030
1605GWMMW037-1-F	05/13/16	10348839032
1605GWMMW037-2-F	05/13/16	10348839034
1605GWMMW036-F	05/13/16	10348839036
1605GWMMW032-F	05/15/16	10348839038
1605GWMMW020-F	05/15/16	10348839040
1605GWMW15A-F	05/15/16	10348839042
1605GWMMW030-F	05/15/16	10348839044
1605GWMMW006-F	05/15/16	10348839046
1605GWMMW007-UMS	05/14/16	10348839025MS
1605GWMMW007-UMSD	05/14/16	10348839025MSD
1605GWMMW036-UMS	05/13/16	10348839037MS
1605GWMMW036-UMSD	05/13/16	10348839037MSD
1605GWMMW007-FMS	05/14/16	10348839024MS
1605GWMMW007-FMSD	05/14/16	10348839024MSD
1605GWMMW036-FMS	05/13/16	10348839036MS
1605GWMMW036-FMSD	05/13/16	10348839036MSD

Introduction

This data review covers 32 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA SW 846 Method noted below:

Method 6020A ICPMS: Cadmium, Manganese, and Selenium.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements were met: 6 months for water and soil (note NIST soil standard reference samples are valid for up to 3 years).

All samples were received intact with proper preservation (pH < 2 for water).

II. ICP-MS Tune Analysis

ICP MS Tuning was performed by the laboratory. All isotopes in the tuning solution mass resolution were within 0.1 amu. Resolutions are < 0.9 amu full width at 10% peak height (Level IV review only).

The percent relative standard deviations (%RSD) of all isotopes in the tuning solution were less than or equal to 5.0%.

III. Calibration

An initial calibration was performed each day of analysis. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

The low-level initial calibration verification (LLICV) and low-level continuing calibration verifications (LLCCVs) standard frequency and limits (70-130%) were met. Limit for manganese are 50 -150%. Only undetected data, or values < 2 x RL are qualified or impacted.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No metal contaminants were found in the initial, continuing and preparation blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Cadmium	0.021 ug/L	1605GWMBW130-U 1605GWMBW027-U 1605GWMBW028-U 1605GWMBW011-U 1605GWMBW009-U 1605GWMBW099-U 1605GWMMW024-U 1605GWMMW031-U 1605GWMMW031-U 1605GWMMW031-U 1605GWMMW037-U 1605GWMMW035-U 1605GWMMW035-U 1605GWMMW035-U 1605GWMMW037-1-U 1605GWMMW037-1-U 1605GWMMW037-2-U 1605GWMMW030-U 1605GWMMW030-U
ICB/CCB	Cadmium	0.046 ug/L	1605GWMBW130-U 1605GWMBW027-U 1605GWMBW028-U 1605GWMBW011-U 1605GWMBW009-U 1605GWMMW025-U 1605GWMBW099-U 1605GWMMW024-U
ICB/CCB	Cadmium	0.055 ug/L	1605GWMMW013-U 1605GWMMW034-2-U 1605GWMMW031-U 1605GWMMW007-U 1605GWMMW009-U 1605GWMMW035-U 1605GWMMW035-U 1605GWMMW037-1-U 1605GWMMW037-2-U 1605GWMMW030-U 1605GWMMW030-U
ICB/CCB	Cadmium	0.023 ug/L	1605GWMMW036-U
ICB/CCB	Cadmium	0.021 ug/L	1605GWMMW032-U 1605GWMMW020-U 1605GWMW15A-U

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
1605GWMBW099-U	Cadmium	0.054 ug/L	0.054U ug/L

Sample	Analyte	Reported Concentration	Modified Final Concentration
1605GWMMW007-U	Cadmium	0.015 ug/L	0.015U ug/L
1605GWMBW006-U	Cadmium	0.027 ug/L	0.027U ug/L
1605GWMBW011-U	Cadmium	0.13 ug/L	0.13J+ ug/L
1605GWMBW009-U	Cadmium	0.11 ug/L	0.11J+ ug/L
1605GWMMW009-U	Cadmium	0.21 ug/L	0.21J+ ug/L
1605GWMMW027-U	Cadmium	0.16 ug/L	0.16J+ ug/L
1605GWMMW036-U	Cadmium	0.018 ug/L	0.018U ug/L

No field blanks were identified in this SDG.

V. ICP-MS Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

ICP interference check samples were reviewed for each analyte as applicable. Percent recovery (%R) of the ICSAB were within the QC limits of 80-120%.

VI. Laboratory Control Sample (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VIII. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits (35% soils).

IX. ICP-MS Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria of $\pm 10\%$ difference for values greater than 50 times the lower limit of quantitation (i.e., the reporting limits [RLs]) were met.

X. ICP-MS Internal Standards

All internal standard percent recoveries (%R) were within 70-130% or a 2x dilution was run with acceptable recoveries

XI. Field Replicates

Field replicate samples were collected in triplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

XII(a). Sample Result Verification

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

XII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Metals - Data Qualification Summary - SDG 10348839

No Sample Data Qualified in this SDG

Metals - Laboratory Blank Data Qualification Summary - SDG 10348839

Sample	Analyte	Modified Final Concentration	A or P	Code
1605GWMBW099-U	Cadmium	0.054U ug/L	Α	10, 11
1605GWMMW007-U	Cadmium	0.015U ug/L	Α	10, 11
1605GWMBW006-U	Cadmium	0.027U ug/L	Α	10, 11
1605GWMBW011-U	Cadmium	0.13J+ ug/L	А	10
1605GWMBW009-U	Cadmium	0.11J+ ug/L	А	10
1605GWMMW009-U	Cadmium	0.21J+ ug/L	А	10
1605GWMMW027-U	Cadmium	0.16J+ ug/L	А	10
1605GWMMW036-U	Cadmium	0.018U ug/L	Α	10

Metals - Field Blank Data Qualification Summary - SDG 10348839

No Sample Data Qualified in this SDG

LDC #:	36509E4a2
SDG #:	
	y: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET Stage 2B

Page: 1 of 3
Reviewer: 200
2nd Reviewer: 200

METHOD: Metals (EPA SW 846 Method 6020A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
ı.	Sample receipt/Technical holding times	A	5/13-15/10
11.	ICP/MS Tune	A	`
111.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	2	
VII.	Matrix Spike/Matrix Spike Duplicates	A	MSID = (47,48) (49,50) (51,52) (53,54)
VIII.	Duplicate sample analysis	2	, , ,
IX.	Serial Dilution	A	
Χ.	Laboratory control samples	A	ردح
XI.	Field Duplicates	N	
XII.	Internal Standard (ICP-MS)	A	
XIII.	Sample Result Verification	N	
xıv	Overall Assessment of Data	A	

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID		Lab ID	Matrix	Date
1	1605GWMBW130-U	Can Mn, Se	10348839001	Water	05/15/16
2	1605GWMBW027-U		10348839003	Water	05/15/16
3	1605GWMBW028-U		10348839005	Water	05/15/16
4	1605GWMBW011-U		10348839007	Water	05/15/16
5	1605GWMBW009-U		10348839009	Water	05/15/16
6	1605GWMMW025-U		10348839012	Water	05/14/16
7	1605GWMBW099-U		10348839014	Water	05/14/16
8	1605GWMMW024-U		10348839016	Water	05/14/16
9	1605GWMMW013-U		10348839018	Water	05/14/16
10	1605GWMMW034-2-U		10348839020	Water	05/14/16
11	1605GWMMW031-U		10348839023	Water	05/13/16
12	1605GWMMW007-U		10348839025	Water	05/13/16
13	1605GWMMW009-U		10348839027	Water	05/13/16
14	1605GWMMW027-U		10348839029	Water	05/13/16
15	1605GWMMW035-U	4	10348839031	Water	05/13/16

LDC #: 36509E4a) SDG #: 10348839 Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET Stage 2B

Date: 7 Slub
Page: Zof S
Reviewer: SS
2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020A)

	Client ID		Lab ID	Matrix	Date
16	1605GWMMW037-1-U	uSe	10348839033	Water	05/13/16
17	1605GWMMW037-2-U		10348839035	Water	05/13/16
18	1605GWMMW036-U	/	10348839037	Water	05/13/16
19	1605GWMMW032-U		10348839039	Water	05/15/16
20	1605GWMMW020-U		10348839041	Water	05/15/16
21	1605GWMW15A-U		10348839043	Water	05/15/16
22	1605GWMMW030-U	 	10348839045	Water	05/15/16
23	1605GWMBW006-U	1	10348839047	Water	05/15/16
24	1605GWMBW130-F	se	10348839002	Water	05/15/16
25	1605GWMBW027-F	\	10348839004	Water	05/15/16
26	1605GWMBW028-F		10348839006	Water	05/15/16
27	1605GWMBW011-F		10348839008	Water	05/15/16
28	1605GWMBW009-F		10348839010	Water	05/15/16
29	1605GWMMW025-F		10348839011	Water	05/14/16
30	1605GWMBW099-F		10348839013	Water	05/14/16
31	1605GWMMW024-F		10348839015	Water	05/14/16
32	1605GWMMW013-F		10348839017	Water	05/14/16
33	1605GWMMW034-2-F	J.	10348839019	Water	05/14/16
34	1605GWMMW031-F		10348839022	Water	05/13/16
35	1605GWMMW007-F	4	10348839024	Water	05/13/16
36	1605GWMMW009-F		10348839026	Water	05/13/16
37	1605GWMMW027-F		10348839028	Water	05/13/16
38	1605GWMMW035-F		10348839030	Water	05/13/16
39	1605GWMMW037-1-F		10348839032	Water	05/13/16
40	1605GWMMW037-2-F		10348839034	Water	05/13/16
41	1605GWMMW036-F	7	10348839036	Water	05/13/16
42	1605GWMMW032-F		10348839038	Water	05/15/16
43	1605GWMMW020-F		10348839040	Water	05/15/16
44	1605GWMW15A-F		10348839042	Water	05/15/16
45	1605GWMMW030-F		10348839044	Water	05/15/16
46	1605GWMMW006-F	4	10348839046	Water	05/15/16
47	1605GWMMW007-UMS (A,	Mule	10348839025MS	Water	05/18/16
48	1605GWMMW007-UMSD		10348839025MSD	Water	05/18/16
49	1605GWMMW036-UMS Ca, M	n,se	10348839037MS	Water	05/13/16
50	1605GWMMW036-UMSD		10348839037MSD	Water	05/13/16

LDC #:_	36509E4
	10348839

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: <u> </u>
Page: <u>る</u> of <u>多</u>
Reviewer:
2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020A)

	Client ID		Lab ID	Matrix	Date
51	1605GWMMW007-FMS	So	10348839024MS	Water	05/13/16
52	1605GWMMW007-FMSD	7	10348839024MSD	Water	05/18/16
53	1605GWMMW036-FMS	Se	10348839036MS	Water	05/13/16
54	1605GWMMW036-FMSD	4	10348839036MSD	Water	05/13/16
55					
56					
57					
58					
59					

MOLES.	 	 				 		 	

LDC #: 36509 E45

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: of Page: of Page: Of Pag

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-23	ω	Al, Sb, As, Ba, Be,(Cd) Ca, Cr, Co, Cu, Fe, Pb, Mg,(Mn) Hg, Ni, K(Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
24-46	ω	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC:47-50	ω	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg Mn Hg, Ni, K Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC251-54	\sim	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K(Se)Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
	n	Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GEAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Ti, V, Zn, Mo, B, Sn, Ti,

Comments: Mercury by CVAA if performed

LDC #: 36509E4&

VALIDATION FINDINGS WORKSHEET PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1 Reviewer: JD 2nd Reviewer:

METHOD: Metals (EPA SW 864 Method 6010/6020/7000)

Soil preparation factor applied:

1-17, 22-23

Sample Concentration units, unless otherwise noted: ug/L Associated Samples: 100 Sample delatification Maximum Maximum 7 Analyte | Maximum Blank 12 23 PB^a ICB/CCB^a PBa Action (ug/L) (mg/Kg) (ua/L) Limit Cd 0.021 0.105 0.054 0.015 0.027

Sample C	Sample Concentration units, unless otherwise noted			se noted:	ug/		Associated	Samples:	1-8	(0)				
4.5		. Carrent	ar e	in the state of th	A STATE OF THE STATE OF	- 10 mm	general Special Section of the sectio	Sample lo	lentification	A 100 CO	a graph and the second	98 1 300 F	January Stranger	
Analyte	Maximum PB ^a (mg/Kg)	PB ^a	Maximum ICB/CCB ^a (ug/L)	1 1	4	5	7							
Cd			0.046	0.23	0.13J+	0.11J+	See PB							

9-17, 22-23 (10) Sample Concentration units, unless otherwise noted: **Associated Samples:** ua/L Sample Identification Maximum Analyte Maximum Maximum Blank 12 13 14 23 PBª PB^a ICB/CCB^a Action (mg/Kg) (ua/L) (ug/L)Limit Cd 0.055 0.275 See PB 0.21J+ 0.16J+ See PB

Sample C	imple Concentration units, unless otherwise noted:		ug/l	L Associated S	Samples:	<u>18 (ic</u>	<u> </u>	 			
							Sa	nple Identifica	flon		
Analyte	Maximum PB ^a (mg/Kg)	PB ^a	Maximum ICB/CCB ^a (ug/L)	Action	18						
Cd			0.023	0.115	0.018						

Sample Concentration units, unless otherwise noted:		se noted: _	ug/L	Associated Samples:	<u> 19-21</u>	(10)				
100	ega est est est	e Filtra		100	23082		Sample I	dentification	17 <u>(</u> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	and the second second
Analyte	Maximum PB ^a	PBª	Maximum ICB/CCB ^a (ug/L)		No Qual.					
Cd			0.021	0.105						

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note: a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Monsanto, P4 Production LLC

Report Date: July 6, 2016

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2B

Laboratory: Pace Analytical

Sample Delivery Group (SDG): 10348839

Sample Identification	Collection Date	Laboratory Sample Identification
1605GWMBW130-U	05/15/16	10348839001
1605GWMBW027-U	05/15/16	10348839003
1605GWMBW028-U	05/15/16	10348839005
1605GWMBW011-U	05/15/16	10348839007
1605GWMBW009-U	05/15/16	10348839009
1605GWMMW025-U	05/14/16	10348839012
1605GWMBW099-U	05/14/16	10348839014
1605GWMMW024-U	05/14/16	10348839016
1605GWMMW013-U	05/14/16	10348839018
1605GWMMW034-2-U	05/14/16	10348839020
1605GWMMW031-U	05/13/16	10348839023
1605GWMMW007-U	05/14/16	10348839025
1605GWMMW009-U	05/13/16	10348839027
1605GWMMW027-U	05/13/16	10348839029
1605GWMMW035-U	05/13/16	10348839031
1605GWMMW037-1-U	05/13/16	10348839033
1605GWMMW037-2-U	05/13/16	10348839035
1605GWMMW036-U	05/13/16	10348839037
1605GWMMW032-U	05/15/16	10348839039
1605GWMMW020-U	05/15/16	10348839041
1605GWMW15A-U	05/15/16	10348839043
1605GWMMW030-U	05/15/16	10348839045
1605GWMBW006-U	05/15/16	10348839047
1605GWMBW130-F	05/15/16	10348839002
1605GWMBW027-F	05/15/16	10348839004

Sample Identification	Collection Date	Laboratory Sample Identification
1605GWMBW028-F	05/15/16	10348839006
1605GWMBW011-F	05/15/16	10348839008
1605GWMBW009-F	05/15/16	10348839010
1605GWMMW025-F	05/14/16	10348839011
1605GWMBW099-F	05/14/16	10348839013
1605GWMMW024-F	05/14/16	10348839015
1605GWMMW013-F	05/14/16	10348839017
1605GWMMW034-2-F	05/14/16	10348839019
1605GWMMW031-F	05/13/16	10348839022
1605GWMMW007-F	05/14/16	10348839024
1605GWMMVV009-F	05/13/16	10348839026
1605GWMMW027-F	05/13/16	10348839028
1605GWMMW035-F	05/13/16	10348839030
1605GWMMW037-1-F	05/13/16	10348839032
1605GWMMW037-2-F	05/13/16	10348839034
1605GWMMW036-F	05/13/16	10348839036
1605GWMMW032-F	05/15/16	10348839038
1605GWMMW020-F	05/15/16	10348839040
1605GWMW15A-F	05/15/16	10348839042
1605GWMMW030-F	05/15/16	10348839044
1605GWMMW006-F	05/15/16	10348839046
1605GWMMW007-FMS	05/14/16	10348839024MS
1605GWMMW007-FMSD	05/14/16	10348839024MSD
1605GWMMW036-FMS	05/13/16	10348839036MS
1605GWMMW036-FMSD	05/13/16	10348839036MSD

Introduction

This data review covers 50 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the methods noted below:

 EPA Method 300.0 for Sulfate and Standard Method 2540C for Total Dissolved Solids.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements (28 days for method 300.0 and 7 days for method 2540C) were met.

All samples were received intact (preserved as required according to each method).

II. Calibration

An initial calibration was performed each day of analysis. The blank plus 6 standard curve produced a coefficient of determination (r^2) of > 0.990. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Sulfate	0.44 mg/L	1605GWMMW027-F 1605GWMMW035-F 1605GWMMW020-F 1605GWMMW030-F 1605GWMMW006-F
PB (prep blank)	Total dissolved solids	8.0 mg/L	1605GWMBW130-U 1605GWMBW027-U 1605GWMBW028-U 1605GWMBW011-U 1605GWMBW009-U 1605GWMMW032-U 1605GWMMW032-U

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

No field blanks were identified in this SDG.

IV. Laboratory Control Sample (LCS)

Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within the QC limits of 80-120% and relative percent differences (RPD) were within 20% limits.

V. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VI. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 90-110% (80-120% TDS) and relative percent differences (RPD) were within 20% limits (35% soils) with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
1605GWMMW007-FMS/MSD (1605GWMBW130-F 1605GWMBW027-F 1605GWMBW028-F 1605GWMBW011-F 1605GWMBW009-F 1605GWMBW099-F 1605GWMBW099-F 1605GWMMW024-F 1605GWMMW013-F 1605GWMMW013-F 1605GWMMW013-F	Sulfate	70 (90-110)	70 (90-110)	J- (all detects)	Α
1605GWMMW036-FMS/MSD (1605GWMMW031-F 1605GWMMW009-F 1605GWMMW035-F 1605GWMMW037-1-F 1605GWMMW037-2-F 1605GWMMW036-F 1605GWMMW032-F 1605GWMMW030-F 1605GWMMW030-F 1605GWMMW030-F	Sulfate	76 (90-110)	-	J- (all detects)	A

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
1605GWMBW087-FMS/MSD (1605GWMBW130-F 1605GWMBW027-F 1605GWMBW028-F 1605GWMBW011-F 1605GWMBW009-F 1605GWMBW099-F 1605GWMBW099-F 1605GWMMW024-F 1605GWMMW013-F 1605GWMMW013-F 1605GWMMW013-F	Sulfate	84 (90-110)	82 (90-110)	J- (all detects)	A

VII. Field Replicates

Field replicate samples were collected in duplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

VIII(a). Sample Result Verification

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

VIII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Wet Chemistry - Data Qualification Summary - SDG 10348839

Sample	Analyte	Flag	A or P	Reason (Code)
1605GWMBW130-F 1605GWMBW027-F 1605GWMBW028-F 1605GWMBW009-F 1605GWMBW099-F 1605GWMBW099-F 1605GWMMW024-F 1605GWMMW031-F 1605GWMMW031-F 1605GWMMW031-F 1605GWMMW031-F 1605GWMMW031-F 1605GWMMW037-F 1605GWMMW037-F 1605GWMMW035-F 1605GWMMW037-2-F 1605GWMMW037-2-F 1605GWMMW037-2-F 1605GWMMW037-2-F 1605GWMMW037-1605GWMMW030-F 1605GWMMW030-F 1605GWMMW030-F 1605GWMMW030-F	Sulfate	J- (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (16)

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 10348839

No Sample Data Qualified in this SDG

Wet Chemistry - Field Blank Data Qualification Summary - SDG 10348839

No Sample Data Qualified in this SDG

LDC #: 36509E6 SDG #: 10348839

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date:	1/2/10
Page:_	<u>\</u> of <u>3</u>
Reviewer:	<u> </u>
2nd Reviewer:	

Laboratory: Pace Analytical

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.4)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments	
Į.	Sample receipt/Technical holding times	A	5/13-15/110	
II	Initial calibration	A		
111.	Calibration verification	A		
IV	Laboratory Blanks	SW		
V	Field blanks	2		1
VI.	Matrix Spike/Matrix Spike Duplicates	SW	MS/D = 1605GWMBWD87-FMS/D (SDG: 1034	8
VII.	Duplicate sample analysis	A	MSID = 1605GWMBWDR7-FMSID (SDG: 1034) DUR=1605SWMSTZ66-UDUR(SDG: 10349184	brack
VIII.	Laboratory control samples	A	LCSID	}/
IX.	Field duplicates	7		$\ $
X.	Sample result verification	N		
ΧI	Overall assessment of data	A		

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank
EB = Equipment blank

SB=Source blank

OTHER:

	Client ID	Lab ID	Matrix	Date
1	1605GWMBW130-U	10348839001	Water	05/15/16
2	1605GWMBW027-U	10348839003	Water	05/15/16
3	1605GWMBW028-U	10348839005	Water	05/15/16
4	1605GWMBW011-U	10348839007	Water	05/15/16
5	1605GWMBW009-U	10348839009	Water	05/15/16
6	1605GWMMW025-U	10348839012	Water	05/14/16
7	1605GWMBW099-U	10348839014	Water	05/14/16
8	1605GWMMW024-U	10348839016	Water	05/14/16
9	1605GWMMW013-U	10348839018	Water	05/14/16
10	1605GWMMW034-2-U	10348839020	Water	05/14/16
11	1605GWMMW031-U	10348839023	Water	05/13/16
12	1605GWMMW007-U	10348839025	Water	05/12/16
13	1605GWMMW009-U	10348839027	Water	05/13/16
14	1605GWMMW027-U	10348839029	Water	05/13/16
15	1605GWMMW035-U	10348839031	Water	05/13/16
16	1605GWMMW037-1-U	10348839033	Water	05/13/16
17	1605GWMMW037-2-U	10348839035	Water	05/13/16

DUP=1605CHUMMUDZW-UDUP(506:10348839)

LDC #: 36509E6 SDG #: 10348839

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Page: Zof Z Reviewer: Zof Zond Reviewer: Zond Revie

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

	Client ID		Lab ID	Matrix	Date
18	1605GWMMW036-U		10348839037	Water	05/13/16
19	1605GWMMW032-U		10348839039	Water	05/15/16
20	1605GWMMW020-U		10348839041	Water	05/15/16
21	1605GWMW15A-U		10348839043	Water	05/15/16
22	1605GWMMW030-U		10348839045	Water	05/15/16
23	1605GWMBW006-U		10348839047	Water	05/15/16
24	1605GWMBW130-F \$0) 12	10348839002	Water	05/15/16
25	1605GWMBW027-F		10348839004	Water	05/15/16
26	1605GWMBW028-F		10348839006	Water	05/15/16
27	1605GWMBW011-F		10348839008	Water	05/15/16
28	1605GWMBW009-F		10348839010	Water	05/15/16
29	1605GWMMW025-F		10348839011	Water	05/14/16
30	1605GWMBW099-F		10348839013	Water	05/14/16
31	1605GWMMW024-F		10348839015	Water	05/14/16
32	1605GWMMW013-F		10348839017	Water	05/14/16
33	1605GWMMW034-2-F		10348839019	Water	05/14/16
34	1605GWMMW031-F		10348839022	Water	05/13/16
35	1605GWMMW007-F		10348839024	Water	05/13/16
36	1605GWMMW009-F		10348839026	Water	05/13/16
37	1605GWMMW027-F		10348839028	Water	05/13/16
38	1605GWMMW035-F		10348839030	Water	05/13/16
39	1605GWMMW037-1-F		10348839032	Water	05/13/16
40	1605GWMMW037-2-F		10348839034	Water	05/13/16
41	1605GWMMW036-F		10348839036	Water	05/13/16
42	1605GWMMW032-F		10348839038	Water	05/15/16
43	1605GWMMW020-F		10348839040	Water	05/15/16
44	1605GWMW15A-F		10348839042	Water	05/15/16
45	1605GWMMW030-F		10348839044	Water	05/15/16
46	1605GWMMW006-F		10348839046	Water	05/15/16
47	1605CVVMMM\\\021-FM8-		10348839022MS	Water	05/13/16
48	1605GWMMW031-FMSD.		10348839022MSD	Water	05/13/16
49	1605GWMMW007-FMS So-	t	10348839024MS	Water	05/18/16
50	1605GWMMW007-FMSD		10348839024MSD	Water	05/18/16
51	1605GWMMW036-FMS		10348839036MS	Water	05/13/16

LDC #:_	36509E6
SDG #:_	10348839
Laborate	ory: Pace Analytical

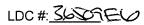
VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 1\S\ID\
Page: 3of 3
Reviewer: 30
2nd Reviewer: 20

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

	Client ID		Lab ID	Matrix	Date
52	1605GWMMW036-FMSD	SUY	10348839036MSD	Water	05/13/16
53					
54					
55					
56					
57					



VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: <u>1</u>	_of1_	
Reviewer:	JD	
2nd reviewer:_		

All circled methods are applicable to each sample.

Sample ID	Parameter
1-23	pH (DS)CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
24-46	pH TDS CI F NO3 NO2 (SO4)O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CI F NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
RE249-52	PH TDS CI F NO3 NO2 6020-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO, NO, SO, O-PO, Alk CN NH, TKN TOC Cr6+ ClO,

Comments:		 	
		 	·

LDC #: 36509E6

VALIDATION FINDINGS WORKSHEET Blanks

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Reviewer: 30	\geq
2nd Reviewer:	

METHOD:Inorganics, Method See Cover

Conc. units	s: <u>mg/l</u>	<u> </u>			Associated San	nples:	<u>37-38, 43, 45</u>	, 46 (Dil: <u>37</u>	<u>', 43, 46 = 5</u>	X; 38 = 10X	(10)	
Analyte	Blank ID	Blank ID	Blank									
	PB	ICB/CCB (mg/L)	Action Limit	No Qualifiers								
SO4		0.44	2.2									

Conc. units	s: <u>mg/L</u>				Asso	ciated Sam	ples: <u> 1</u>	-5, 19-20	(11)	 	
Analyte	Blank ID	Blank ID	Blank								
	РВ	ICB/CCB (mg/L)	Action Limit	No Qualifiers							
TDS	8.0		40								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 36509E6

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:	of
Reviewer	_JO
2nd Reviewer	: a

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A"
--

Was a matrix spike analyzed for each matrix in this SDG?

Were matrix spike percent recoveries (%R) within the control limits of 90-110? If the sample concentration exceeded the spike concentration by a factor

of 4 or more, no action was taken.

YN N/A Were all duplicate sample relative percent differences (RPD) \leq 20% for samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

		****		MS	MSD			
#	MS/MSD ID	<u> Matrix</u>	Analyte	%Recovery	%Recovery	RPD (Limits)	Associated Samples	Qualifications
L	49/50	W	SO4	70	70		24-33, 35	J-/UJ/A (det) (16)
	51/52	W	SO4	76			34, 36-43, 45-46	J-/UJ/A (det) (16)
	1605GWMBW087- FMS/D (SDG: 10648833)	W	SO4	84	82		24-33, 35	J-/UJ/A (det) (16)
E								
L								
_								
E								
-								
		-						

Comments:	W. I.	 		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Monsanto, P4 Production LLC

Report Date: July 6, 2016

Matrix: Water

Parameters: Metals by ICPMS SW-846 Method 6020A

Validation Level: Stage 2B & 4

Laboratory: Pace Analytical

Sample Delivery Group (SDG): 10349184

Sample Identification	Collection Date	Laboratory Sample Identification
1605GWMMW028-1-U**	05/12/16	10349184001**
1605GWMMW023-U**	05/12/16	10349184003**
1605SWMDS034-U	05/12/16	10349184005
1605GWMMW022-U**	05/12/16	10349184007**
1605GWMMW011-U**	05/12/16	10349184009**
1605GWMMW010-U**	05/12/16	10349184011**
1605GWMMW028-2-U	05/12/16	10349184013
1605SWMST226-U**	05/12/16	10349184015**
1605SWMST044-U**	05/12/16	10349184017**
1605SWMST045-1-U**	05/12/16	10349184019**
1605SWMST275-U**	05/12/16	10349184021**
1605SWMST136-U	05/12/16	10349184023
1605SWMST045-2-U	05/12/16	10349184024
1605SWMST045-2-F	05/12/16	10349184025
1605SWMST136-F	05/12/16	10349184026
1605GWMMW028-1-F	05/12/16	10349184002
1605GWMMW023-F	05/12/16	10349184004
1605SWMDS034-F	05/12/16	10349184006
1605GWMMW022-F**	05/12/16	10349184008**
1605GWMMW011-F**	05/12/16	10349184010**
1605GWMMW010-F**	05/12/16	10349184012**
1605GWMMW028-2-F**	05/12/16	10349184014**
1605SWMST226-F**	05/12/16	10349184016**
1605SWMST044-F**	05/12/16	10349184018**
1605SWMST045-1-F**	05/12/16	10349184020**

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMST275-F**	05/12/16	10349184022**
1605SWMST226-UMS	05/12/16	10349184015MS
1605SWMST226-UMSD	05/12/16	10349184015MSD
1605SWMST226-FMS	05/12/16	10349184016MS
1605SWMST226-FMSD	05/12/16	10349184016MSD
1605SWMST275-FMS	05/12/16	10349184022MS
1605SWMST275-FMSD	05/12/16	10349184022MSD

^{**}Indicates sample underwent Stage 4 review.

Introduction

This data review covers 32 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA SW 846 Method noted below:

 Method 6020A ICPMS: Cadmium, Calcium, Magnesium, Manganese, and Selenium.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

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- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements were met: 6 months for water and soil (note NIST soil standard reference samples are valid for up to 3 years).

All samples were received intact with proper preservation (pH < 2 for water).

II. ICP-MS Tune Analysis

ICP MS Tuning was performed by the laboratory. All isotopes in the tuning solution mass resolution were within 0.1 amu. Resolutions are < 0.9 amu full width at 10% peak height (Stage 4 review only) with the following exceptions:

Date	Isotope	Mass Calibration (Limits)	Associated Samples	Affected Analyte	Flag	A or P
05/26/16	Magnesium ²⁴	23.85 (23.9-24.1 amu)	1605SWMST226-F**	Calcium	J (all detects)	Р

The percent relative standard deviations (%RSD) of all isotopes in the tuning solution were less than or equal to 5.0%.

III. Calibration

An initial calibration was performed each day of analysis. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

The low-level initial calibration verification (LLICV) and low-level continuing calibration verifications (LLCCVs) standard frequency and limits (70-130%) were met. Limit for manganese are 50 -150%. Only undetected data, or values < 2 x RL are qualified or impacted.

Magnesium results were outside the QC limits; data were not qualified since the sample concentration for sample 1605SWMDS034-F were greater than 2X the RLs.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No metal contaminants were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Cadmium Magnesium	0.030 ug/L 3.7 ug/L	1605SWMST044-F** 1605SWMST275-F**
ICB/CCB	Cadmium	0.032 ug/L	1605SWMST044-F** 1605SWMST275-F**
ICB/CCB	Selenium	0.14 ug/L	1605GWMMW028-1-U** 1605GWMMW023-U** 1605SWMDS034-U 1605GWMMW022-U** 1605GWMMW011-U** 1605GWMMW010-U** 1605GWMMW028-2-U 1605SWMST226-U** 1605SWMST044-U** 1605SWMST045-1-U** 1605SWMST045-1-U** 1605SWMST136-U 1605SWMST045-2-U
PB (prep blank)	Cadmium Manganese	0.013 ug/L 0.38 ug/L	1605GWMMW022-U** 1605GWMMW011-U** 1605GWMMW010-U** 1605GWMMW028-2-U
ICB/CCB	Cadmium	0.038 ug/L	1605GWMMW022-U** 1605GWMMW011-U** 1605GWMMW010-U** 1605GWMMW028-2-U
ICB/CCB	Cadmium	0.035 ug/L	1605SWMDS034-F
PB (prep blank)	Selenium	0.23 ug/L	1605SWMST045-2-F 1605SWMST136-F 1605GWMMW028-1-F 1605GWMMW023-F 1605GWMMW011-F** 1605GWMMW011-F** 1605GWMMW010-F** 1605GWMMW028-2-F** 1605SWMST226-F**
PB (prep blank)	Cadmium Calcium Magnesium	0.34 ug/L 18.3 ug/L 7.5 ug/L	1605SWMST045-2-F 1605SWMST136-F 1605SWMST226-F** 1605SWMST045-1-F**
ICB/CCB	Cadmium	0.023 ug/L	1605SWMST045-2-F 1605SWMST136-F 1605SWMST226-F** 1605SWMST045-1-F**

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
1605SWMST044-F**	Cadmium	0.026 ug/L	0.026U ug/L
1605SWMST275-F**	Cadmium	0.022 ug/L	0.022U ug/L
1605GWMMW011-U**	Selenium Manganese	0.41 ug/L 0.27 ug/L	0.41U ug/L 0.27U ug/L
1605SWMST044-U**	Selenium	0.49 ug/L	0.49U ug/L
1605SWMST045-1-U**	Selenium	0.56 ug/L	0.56J+ ug/L
1605SWMST275-U**	Selenium	0.23 ug/L	0.23U ug/L
1605SWMST045-2-U	Selenium	0.48 ug/L	0.48U ug/L
1605GWMMW028-2-U	Cadmium	0.023 ug/L	0.023U ug/L
1605SWMDS034-F	Cadmium	0.068 ug/L	0.068U ug/L
1605SWMST045-2-F	Selenium Cadmium	0.54 ug/L 0.027 ug/L	0.54J+ ug/L 0.027U ug/L
1605GWMMW023-F	Selenium	0.18 ug/L	0.18U ug/L
1605GWMMW011-F**	Selenium	0.50 ug/L	0.50U ug/L
1605SWMST045-1-F**	Selenium Cadmium	0.59 ug/L 0.018 ug/L	0.59J+ ug/L 0.018U ug/L
1605SWMST136-F	Cadmium	0.061 ug/L	0.061U ug/L
1605SWMST226-F**	Cadmium	0.067 ug/L	0.067U ug/L

No field blanks were identified in this SDG.

V. ICP-MS Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

ICP interference check samples were reviewed for each analyte as applicable. Percent recovery (%R) of the ICSAB were within the QC limits of 80-120%.

VI. Laboratory Control Sample (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VIII. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits (35% soils).

IX. ICP-MS Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria of $\pm 10\%$ difference for values greater than 50 times the lower limit of quantitation (i.e., the reporting limits [RLs]) were met.

X. ICP-MS Internal Standards

All internal standard percent recoveries (%R) were within 70-130% or a 2x dilution was run with acceptable recoveries.

XI. Field Replicates

Field replicate samples were collected in triplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

XII(a). Sample Result Verification

All sample result verifications were acceptable for samples on which a Stage 4 review was performed.

The results for the dissolved metals sample analysis were greater than the total metals sample analysis as follows:

	Concentration (mg/L)		
Analyte	1509SWMDS026-U	1509SWMDS026-F	
Selenium	0.0297	0.0421	

	Concentration (mg/L)			
Analyte	1509SWMST019-1-U	1509SWMST019-1-F		
Selenium	0.00246	0.00524		

Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

XII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Metals - Data Qualification Summary - SDG 10349184

Sample	Analyte	Flag	A or P	Reason (Code)
1605SWMST226-F**	Calcium	J (all detects)	Р	Instrument tune (AMU) (5)

Metals - Laboratory Blank Data Qualification Summary - SDG 10349184

Sample	Analyte	Modified Final Concentration	A or P	Code
1605SWMST044-F**	Cadmium	0.026U ug/L	A	10, 11
1605SWMST275-F**	Cadmium	0.022U ug/L	Α	10, 11
1605GWMMW011-U**	Selenium Manganese	0.41U ug/L 0.27U ug/L	А	11
1605SWMST044-U**	Selenium	0.49U ug/L	A	11
1605SWMST045-1-U**	Selenium	0.56J+ ug/L	А	11
1605SWMST275-U**	Selenium	0.23U ug/L	Α	11
1605SWMST045-2-U	Selenium	0.48U ug/L	A	11
1605GWMMW028-2-U	Cadmium	0.023U ug/L	A	10, 11
1605SWMDS034-F	Cadmium	0.068U ug/L	А	10
1605SWMST045-2-F	Selenium Cadmium	0.54J+ ug/L 0.027U ug/L	А	10, 11
1605GWMMW023-F	Selenium	0.18U ug/L	А	11
1605GWMMW011-F**	Selenium	0.50U ug/L	А	10, 11
1605SWMST045-1-F**	Selenium Cadmium	0.59J+ ug/L 0.018U ug/L	Α	10, 11
1605SWMST136-F	Cadmium	0.061U ug/L	A	10, 11
1605SWMST226-F**	Cadmium	0.067U ug/L	А	10, 11

Metals - Field Blank Data Qualification Summary - SDG 10349184

No Sample Data Qualified in this SDG

LDC #:3	6509F4)
SDG #:1	-
Laboratory:	Pace Analytical

VALIDATION COMPLETENESS WORKSHEET Stage 2B/4

Date: 71510
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Reviewer: SO
2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6020A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	Slizliv
11.	ICP/MS Tune	SW	
III.	Instrument Calibration	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	2	
VII.	Matrix Spike/Matrix Spike Duplicates	A	MS(D=(20,28) (29,30) (31,32)
VIII.	Duplicate sample analysis	2	
IX.	Serial Dilution	A	
X.	Laboratory control samples	A	لدح
XI.	Field Duplicates	2	
XII.	Internal Standard (ICP-MS)	A	
XIII.	Sample Result Verification	SW	Not reviewed for Stage 2B validation.
XIV	Overall Assessment of Data	A	

Note: A = Acceptable

ND = No compounds detected N = Not provided/applicable R = Rinsate

D = Duplicate TB = Trip blank

SB=Source blank OTHER:

SW = See worksheet

FB = Field blank EB = Equipment blank ** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	1605GWMMW028-1-U** C&, H.M.	<u>(a</u> 10349184001**	Water	05/12/16
2	1605GWMMW023-U**	10349184003**	Water	05/12/16
3	1605SWMDS034-U Se	10349184005	Water	05/12/16
4	1605GWMMW022-U** (à, Hu, Se	10349184007**	Water	05/12/16
5	1605GWMMW011-U**	10349184009**	Water	05/12/16
6	1605GWMMW010-U**	10349184011**	Water	05/12/16
7	1605GWMMW028-2-U	10349184013	Water	05/12/16
8	1605SWMST226-U**	10349184015**	Water	05/12/16
9	1605SWMST044-U** Se	10349184017**	Water	05/12/16
10	1605SWMST045-1-U** Se	10349184019**	Water	05/12/16
11	1605SWMST275-U** Se	10349184021**	Water	05/12/16
12	1605SWMST136-U S2_	10349184023	Water	05/12/16
13	1605SWMST045-2-U · Sc	10349184024	Water	05/12/16
14	1605SWMST045-2-F ' Cd, Ma, Ca,	2 10349184025	Water	05/12/16
15	1605SWMST136-F	10349184026	Water	05/12/16

LDC #:_	36509F4 6)
	10349184
Laborato	ry: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

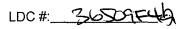
Stage 2B/4

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2nd Reviewer:	_	

METHOD: Metals (EPA SW 846 Method 6020A)

	Client ID		Lab ID	Matrix	Date
16	1605GWMMW028-1-F	<u>Se</u>	10349184002	Water	05/12/16
17	1605GWMMW023-F	SeSe	10349184004	Water	05/12/16
18	1605SWMDS034-F	Ca, Ma, Ca, Se	10349184006	Water	05/12/16
19	1605GWMMW022-F**	Se	10349184008**	Water	05/12/16
20	1605GWMMW011-F**	<u> </u>	10349184010**	Water	05/12/16
21	1605GWMMW010-F**	Se	10349184012**	Water	05/12/16
22	1605GWMMW028-2-F**	Se	10349184014**	Water	05/12/16
23	1605SWMST226-F**	(a, Ma, ld, Se	10349184016**	Water	05/12/16
24	1605SWMST044-F**	Ca, My, co, se	10349184018**	Water	05/12/16
25	1605SWMST045-1-F**		10349184020**	Water	05/12/16
26	1605SWMST275-F**	4	10349184022**	Water	05/12/16
27	1605SWMST226-UMS	Ca, Ma, Se	10349184015MS	Water	05/12/16
28	1605SWMST226-UMSD	<u> </u>	10349184015MSD	Water	05/12/16
29	1605SWMST226-FMS	cd, ca, my, se	10349184016MS	Water	05/12/16
30	1605SWMST226-FMSD	4	10349184016MSD	Water	05/12/16
31	1605SWMST275-FMS		10349184022MS	Water	05/12/16
32	1605SWMST275-FMSD	4	10349184022MSD	Water	05/12/16
33					
34					
35					
36					
37					

Note	es:		 	 	 	 	



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Reviewer: \(\frac{2}{2} \)
2nd Reviewer: \(\frac{2}{2} \)

Method: Metals (EPA SW 846 Method 6010B/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	/			
Cooler temperature criteria was met.	/			
II. ICP/MS Tune				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?		/		
Were %RSD of isotopes in the tuning solution ≤5%?	_			
III. Calibration				
Were all instruments calibrated daily, each set-up time?	/			
Were the proper number of standards used?	_			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?	_			
Were all initial calibration correlation coefficients ≥ 0.995?	/			
IV. Blanks				
Was a method blank associated with every sample in this SDG?	/			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.				
V. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	/			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?				
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	/			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.				
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were \leq 5X the RL, including when only one of the duplicate sample values were \leq 5X the RL.	/			
VII. Laboratory control samples	·			
Was an LCS anaylzed for this SDG?				
Was an LCS analyzed per extraction batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?				

VALIDATION FINDINGS CHECKLIST

Page: Lof Z Reviewer: 30 2nd Reviewer: ______

Validation Area	Yes	No	NA	Findings/Comments
VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)		· · · · · · · · · · · · · · · · · · ·	•	
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	/			
If the %Rs were outside the criteria, was a reanalysis performed?	/			
IX. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?	/		į	
Were all percent differences (%Ds) < 10%?	/			
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.		/		
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	/			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		1		
Target analytes were detected in the field duplicates.			/	
XIII. Field blanks				
Field blanks were identified in this SDG.		/		
Target analytes were detected in the field blanks.			/	

N N/A

VALIDATION FINDINGS WORKSHEET <u>Tune (ICP-MS)</u>

Page: of A

METHOD: Metals (EPA SW846 Method6020)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y/N/N/A Were all isotopes in the tuning solution mass resolution within 0.1amu?

Were %RSD of isotopes in the tuning solution ≤5%?

#	Date	Isotope	Associated Metals	Mass (Limits)	RSD (≤5%)	Associated Samples	Qualifications
	05/26/16	24 (Mg)	Ca	23.85 (23.9-24.1)		23	J/UJ/P (det) (5)

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		-					
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LDC #: 36509F4aD

VALIDATION FINDINGS WORKSHEET <u>Calibration</u>

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2nd Reviewer:	C	_

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

	inications below for all questions answered. No. Not applicable questions are identified as IN/A.
<u>/Y/ N N/A</u>	Were all instruments calibrated daily, each set-up time, and were the proper number of standards used?
	Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110% for all analytes except mercury (80-120%)

LEVEL WONLY:

Was a midrange cyanide standard distilled?

N N/A

Are all correlation coefficients >0.995?

Were recalculated results acceptable? See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.

#	Date	Calibration ID	Analyte	%R	Associated Samples	Qualification of Data
	06/02/16	CRDL (8:20)	Mg	155.5	18	No Qual. (>2X RL) (へ)
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-						
						U-1/11 M-12-1

Comments:			

LDC #: 36509F4aD

VALIDATION FINDINGS WORKSHEET PB/ICB/CCB QUALIFIED SAMPLES

Code: Skick=10

Page: 1 of 2
Reviewer: JD
2nd Reviewer:

METHOD: Metals (EPA SW 864 Method 6010/6020/7000)

Soil preparation factor applied:_____

PB=1

Sample C	oncentratio	n units, unl	ess otherwi	se noted: _		-	Associated Samples: 24, 26				<u>_</u>	 	
						A CONTRACT	40 T		Sampledo	entification	Mr. Trees		
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/l_)	Maximum ICB/CCB ^a		24	26							
Cd		0.030	0.032	0.16	0.026	0.022							
Mg		3.7		18.5									

Sample Concentration units, unless otherwise noted:

Associated Samples:

1-13

12 May 12 W	a service.		yani yani jir	in probabil		, se 10		A SECTION AND ADDRESS OF THE PARTY OF THE PA	Sample lo	dentification		1, A 1
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/l)	Maximum ICB/CCB ^a (ug/L)		5	9	10	11	13			
Se		0.14		0.7	0.41	0.49	0.56J+	0.23	0.48			

Sample Concentration units, unless otherwise noted:

Associated Samples:

4-7

					Marine -		TO STANKE	Sampled	dentification		Messell .	
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (ug/L)		5	7						
Cd		0.013	0.038	0.19		0.023						
Mn		0.38	_	1.9	0.27							

Sample Concentration units, unless otherwise noted:

Associated Samples:

18 (10X)

e e str	116	g at et et en				10 th 47		Sampled	entification		 Children March
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (ug/L)	Action	18						
Cd			0.035	1.75	0.068						

VALIDATION FINDINGS WORKSHEET PB/ICB/CCB QUALIFIED SAMPLES

Code: IICCB:10
PB:11

Page: 2 of 2
Reviewer: JD
2nd Reviewer:

METHOD: Metals (EPA SW 864 Method 6010/6020/7000)

Sample Concentration units, unless otherwise noted:

Soil preparation factor applied:_____
Associated Samples:____

14-17, 19-23, 25

Park St. St.	and the	No.			JACODA,	fage and the second	Marin Salar		Sample	ieniiieation_		e de la companya de l	A Partie
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a	Maximum ICB/CCB ^a (ug/i)		14	17	20	25					
Se		0.23		1.15	0.54J+	0.18	0.50	0.59J+					

Sample Concentration units, unless otherwise noted:

Associated Samples:

14-15, 23, 25

		*7:4			198 5 12	A STATE OF THE STA	in the second		Sample de		desta in proes	**************************************	opperation of
Analyte	Maximum PB ^a (mg/Kg)	PBª	Maximum ICB/CCB ^a (ug/L)		14	15	23	25					
Cd		0.34	0.023	1.7	0.027	0.061	0.067	0-018 0:18 30					
Са		18.3		91.5									
Mg		7.5		37.5									

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note: a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

VALIDATION FINDINGS WORKSHEET Sample Result Verification

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METHOD: Metals (EPA SW 846 Method 6010/6020/7000)

		I		<u> </u>		
#	Sample ID	Analyte	Total (ug/l)	Dissolved (ug/L)	Finding	Qualifications
	1/16	Se	3.6	5.0	Total < Dissolved	Text
		77				
	7/22	Se	3.7	4.6	Total < Dissolved	Text

Comments:____

LDC #: 36507546

VALIDATION FINDINGS WORKSHEET Initial and Continuing Calibration Calculation Verification

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Reviewer:	<u> </u>
2nd Reviewer:	CI

METHOD: Trace Metals (See cover)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = <u>Found</u> x 100 True

Where, Found = concentration (in ug/L) of each analyte <u>measured</u> in the analysis of the ICV or CCV solution True = concentration (in ug/L) of each analyte in the ICV or CCV source

					Recalculated	Reported	
Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	%R	%R	Acceptable (Y/N)
	ICP (Initial calibration)	:					
700 7:52	ICP/MS (Initial calibration)	Ca	983.9 valu	1000 uglc	98.4%P	98.4%R	7
	CVAA (Initial calibration)		7	<i>S</i>			
	ICP (Continuing calibration)						
CCV 14:29	ICP/MS (Continuing calibration)	Ca	78.91 vg/	80 valu	98.67.2	98.6%R	4
	CVAA (Contining calibration))	<u> </u>			
	GFAA (Initial calibration)						
	GFAA (Continuing calibation)						

Comments:	 		

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

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Reviev	wer:<	30
2nd Revie	wer:	9

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

 $%R = Found \times 100$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation,

True

Found = SSR (spiked sample result) - SR (sample result).

True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

 $RPD = \underline{[S-D]} \times 100$

Where, S = Original sample concentration

(S+D)/2

D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

 $%D = |I-SDR| \times 100$

Where, I = Initial Sample Result (mg/L)

SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
TCS AB 8118	ICP interference check	Se	100 7 valc	(00 vall	100-7%R	1007%R	7
15:09 15:09	Laboratory control sample	Ma	2024 291	2000 09(1	101%8	10178	
Pazi Pazi	Matrix spike	<u>Ca</u>	(SSR-SR) 99.98 ig/	100 vall	(00%8	(00%R	
MSD	Duplicate	Ca	2498 sql	2543 uglu	2% RD	2%	
SER- 15:19	ICP serial dilution	Ma	2301 291	2288 ugl	0.6%0	0.6%	4

Comments:			
			

LDC #: 36509 FUD

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:_	<u>of</u>
Reviewer:_	20
2nd reviewer:_	0/

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please YNN N YNN N YN N	<u> /A</u>	Have results been reporte	ed and calculated co orated range of the	orrectly?	e questions are identified as "N/A". within the linear range of the ICP?
Detecte equatio	-	te results for (4 `) CÉ		were recalculated and verified using the following
Concentr	ation =	(RD)(FV)(Dil) (In. Vol.)	Reca	alculation:	
RD FV In. Vol. Dil	= = =	Raw data concentration Final volume (ml) Initial volume (ml) or weight (G) Dilution factor		0.58	

#	Sample ID	Analyte	Reported Concentration (レヘン	Calculated Concentration (しょし)	Acceptable (Y/N)
	2	Mn	82.0	302	5
	4	CA	82.0	0.58	
	8	Se	0.41	0.41	
	6	\triangle	8.2	8.8	
	8	Se	4.0	4.0	
	9	So	0.49	0.49	
	10	Se Se Se	0.56	0.56	
	i\	Se	0.23	0.23	
	19	Se	0.23 47.8	0.23	
	20	Se Se Se	0.50	0,50	
	2\	Se_	(2)	127	
	22	Se	4.6	4.6	
	23	Ca	S0800	50800	
	24	Ma	20000	20000	
	25	(Z)	810,0	80.0	
	26	Ca	10400	10400	
	1	<u> </u>	0.013	0.03	4

Note:	 	 	 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Monsanto, P4 Production LLC

Report Date: July 6, 2016

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2B & 4

Laboratory: Pace Analytical

Sample Delivery Group (SDG): 10349184

Sample Identification	Collection Date	Laboratory Sample Identification
1605GWMMW028-1-U	05/12/16	10349184001
1605GWMMW023-U**	05/12/16	10349184003**
1605SWMDS034-U	05/12/16	10349184005
1605GWMMW022-U**	05/12/16	10349184007**
1605GWMMW011-U**	05/12/16	10349184009**
1605GWMMW010-U**	05/12/16	10349184011**
1605GWMMW028-2-U	05/12/16	10349184013
1605SWMST226-U**	05/12/16	10349184015**
1605SWMST044-U**	05/12/16	10349184017**
1605SWMST045-1-U**	05/12/16	10349184019**
1605SWMST275-U**	05/12/16	10349184021**
1605SWMST136-U	05/12/16	10349184023
1605SWMST045-2-U	05/12/16	10349184024
1605SWMST045-2-F	05/12/16	10349184025
1605SWMST136-F	05/12/16	10349184026
1605GWMMW028-1-F	05/12/16	10349184002
1605GWMMW023-F	05/12/16	10349184004
1605SWMDS034-F	05/12/16	10349184006
1605GWMMW022-F**	05/12/16	10349184008**
1605GWMMW011-F**	05/12/16	10349184010**
1605GWMMW010-F**	05/12/16	10349184012**
1605GWMMW028-2-F**	05/12/16	10349184014**
1605SWMST226-F**	05/12/16	10349184016**
1605SWMST044-F**	05/12/16	10349184018**
1605SWMST045-1-F**	05/12/16	10349184020**

Sample Identification	Collection Date	Laboratory Sample Identification
1605SWMST275-F**	05/12/16	10349184022**
1605SWMST226-UDUP	05/12/16	10349184015DUP
1605GWMMW011-FMS	05/12/16	10349184010MS
1605GWMMW011-FMSD	05/12/16	10349184010MSD
1605SWMST226-FMS	05/12/16	10349184016MS
1605SWMST226-FMSD	05/12/16	10349184016MSD

^{**}Indicates sample underwent Stage 4 review.

Introduction

This data review covers 31 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the method noted below:

 EPA Method 300.0 for Sulfate and Standard Method 2540C for Total Dissolved Solids.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements (28 days for method 300.0 and 7 days for method 2540C) were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
1605GWMMW028-1-U 1605GWMMW023-U** 1605SWMDS034-U 1605GWMMW022-U** 1605GWMMW011-U** 1605GWMMW010-U** 1605GWMMW028-2-U 1605SWMST226-U** 1605SWMST044-U** 1605SWMST045-1-U** 1605SWMST045-1-U** 1605SWMST045-1-U**	Total dissolved solids	8 days	7 days	J- (all detects)	Р

All samples were received intact (preserved as required according to each method).

II. Calibration

An initial calibration was performed each day of analysis. The blank plus 6 standard curve produced a coefficient of determination (r^2) of > 0.990. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Sulfate	0.44 mg/L	1605GWMMW028-1-F 1605GWMMW023-F 1605SWMDS034-F 1605GWMMW022-F**
ICB/CCB	Sulfate	0.45 mg/L	1605SWMST045-2-F 1605SWMST136-F 1605SWMST226-F** 1605SWMST044-F** 1605SWMST045-1-F** 1605SWMST275-F**
ICB/CCB	Sulfate	0.42 mg/L	1605GWMMW011-F** 1605GWMMW010-F**

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
1605SWMST275-F**	Sulfate	1.7 mg/L	1.7J+ mg/L

No field blanks were identified in this SDG.

IV. Laboratory Control Sample (LCS)

Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within the QC limits of 80-120% and relative percent differences (RPD) were within 20% limits.

V. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VI. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 90-110% (80-120% TDS) and relative percent differences (RPD) were within 20% limits (35% soils) with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
1605GWMMW036-FMS/MSD (1605GWMMW028-1-F 1605GWMMW023-F 1605SWMDS034-F 1605GWMMW022-F**)	Sulfate	76 (90-110)	82 (90-110)	J- (all detects)	A
1605SWMST226-FMS/MSD (1605SWMST045-2-F 1605SWMST136-F 1605GWMMW011-F** 1605GWMMW010-F** 1605GWMMW028-2-F** 1605SWMST226-F** 1605SWMST044-F** 1605SWMST045-1-F** 1605SWMST045-1-F**	Sulfate	78 (90-110)	79 (90-110)	J- (all detects)	А

VII. Field Replicates

Field replicate samples were collected in duplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

VIII(a). Sample Result Verification

All sample result verifications were acceptable for samples on which a Stage 4 review was performed. Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

VIII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Wet Chemistry - Data Qualification Summary - SDG 10349184

Sample	Analyte	Flag	A or P	Reason
1605GWMMW028-1-U 1605GWMMW023-U** 1605SWMDS034-U 1605GWMMW022-U** 1605GWMMW011-U** 1605GWMMW010-U** 1605GWMMW028-2-U 1605SWMST226-U** 1605SWMST044-U** 1605SWMST045-1-U** 1605SWMST75-U** 1605SWMST045-1-U*	Total dissolved solids	J- (all detects)	Р	Technical holding time (1)
1605SWMST045-2-F 1605SWMST136-F 1605GWMMW028-1-F 1605GWMMW023-F 1605GWMMW022-F** 1605GWMMW011-F** 1605GWMMW010-F** 1605GWMMW028-2-F** 1605SWMST226-F** 1605SWMST044-F** 1605SWMST045-1-F**	Sulfate	J- (all detects)	Α	Matrix spike/Matrix spike duplicate (%R) (16)

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 10349184

Sample	Analyte	Modified Final Concentration	A or P	Code
1605SWMST275-F**	Sulfate	1.7J+ mg/L	А	10

Wet Chemistry - Field Blank Data Qualification Summary - SDG 10349184

No Sample Data Qualified in this SDG

LDC #:	36509F6					
SDG #:	10349184					
Laboratory: Pace Analytical						

VALIDATION COMPLETENESS WORKSHEET

Stage 2B/4

Date: <u>7 ∑ い</u>
Page: <u>Z</u> of <u> </u>
Reviewer: 30
2nd Reviewer:

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

	Client ID		Lab ID	Matrix	Date
18	1605SWMDS034-F	S04	10349184006	Water	05/12/16
19	1605GWMMW022-F**		10349184008**	Water	05/12/16
20	1605GWMMW011-F**		10349184010**	Water	05/12/16
21	1605GWMMW010-F**		10349184012**	Water	05/12/16
22	1605GWMMW028-2-F**		10349184014**	Water	05/12/16
23	1605SWMST226-F**		10349184016**	Water	05/12/16
24	1605SWMST044-F**		10349184018**	Water	05/12/16
25	1605SWMST045-1-F**		10349184020**	Water	05/12/16
26	1605SWMST275-F**	<u> </u>	10349184022**	Water	05/12/16
27	1605SWMST226-UDUP		10349184015DUP	Water	05/12/16
28	1605GWMMW011-FMS	504	10349184010MS	Water	05/12/16
29	1605GWMMW011-FMSD		10349184010MSD	Water	05/12/16
30	1605SWMST226-FMS		10349184016MS	Water	05/12/16
31	1605SWMST226-FMSD	4	10349184016MSD	Water	05/12/16
32					
33					
34					
35					
36					

LDC #: 36007F4

VALIDATION FINDINGS CHECKLIST

Page: of Z Reviewer: 30 2nd Reviewer:

Method:Inorganics (EPA Method Sections)

Yes	No	NA	Findings/Comments
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		-	
	Yes		



VALIDATION FINDINGS CHECKLIST

Page: Zof Z Reviewer: SS 2nd Reviewer: Z

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	-			
Were detection limits < RL?	/			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	/			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		1		
Target analytes were detected in the field duplicates.				
X. Field blanks	·			
Field blanks were identified in this SDG.				
Target analytes were detected in the field blanks.				

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Page:_	<u>(</u> of_\	_
Reviewer:_	OZ	_
2nd reviewer:_	a	_

All circled dates have exceeded the technical holding time.

Y N N/A

Were all samples preserved as applicable to each method?

Y N N/A

Were all cooler temperatures within validation criteria?

Method:		SM2540C					
Parameters:		TDS					
Technical filtering tir	me:	7 Days					
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1-13, 27	05/12/16	05/20/16	8 Days				J-/UJ/P (det) (1)
					-		

VALIDATION FINDINGS WORKSHEET Blanks

Page: _\of_ Reviewer: _\cap 2nd Reviewer: _\cap 3

METHOD:Inorganics, Method See Cover

Conc. units	s: <u>mg/L</u>	<u> </u>			Asso	ociated Sar	nples: <u> 1</u>	<u>6-19 (17,</u>	, 19 = 5X; <u>1</u>	3 = 2X)	(10)	
Analyte	Blank ID	Blank ID	Blank									
100	РВ	ICB/CCB (mg/L)	Action Limit	No Qualifiers								
SO4		0.44	2.2		_							
Conc. units	s: <u> </u>	<u> </u>			Asso	ociated Sar	nples: <u>1</u>	4-15, 23-2 <u>6</u>		(0)		
Analyte	Blank ID	Blank ID	Blank								· · · · · · · · · · · · · · · · · · ·	
	РВ	ICB/CCB (mg/L)	Action Limit	26								
SO4		0.45	2.25	1.7J+								
Conc. units: mg/L Associated Samples: 20-21												
Analyte	Blank ID	Blank ID	Blank									
	РВ	ICB/CCB (mg/L)	Action Limit	No Qualifiers								
SO4		0.42	2.1									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page:_	<u>\</u> of	1
Reviewer:	ご	O
2nd Reviewer:	a	

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

YN N/A Was a war of 4 or of 4	of 4 or more, no action was taken. N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for samples? VEL IV ONLY: N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.								
# MS/MSD ID	<u>Matrix</u>	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications		
1605GWMMW036- FMS/D (SDG: 10348839)	W	SO4	76	87		16-19	J-/UJ/A (det) (16)		
30/31	W	SO4	78	79		14-15, 20-26	J-/UJ/A (det) (16)		
Comments:									

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page:of_	
Reviewer:	<u> </u>
2nd Reviewer:	<u>a</u>

Method: Inorganics, Method _	<u>See</u>	Cover					
The correlation coefficient (r) for the	calibration of _	SO + was recalculated.Calibration date: 5/23/10					
An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:							
%R = <u>Found X 100</u>	Where,	Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution					
True		True = concentration of each analyte in the ICV or CCV source					

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (mg/l)	Area	r or r ²	r or r ²	(Y/N)
Initial Calibration	-	s1	1	0.143			
Verification		s2	2	0.318	0.999978	0.999972	U-*
	80.	s3	5	0.894			
	1 CU4	s4	25	5.102)
	,	s5	50	10.468			
		s6	100	21.079			
JCU 15:00 Calibration verification		Found 12.2mg/	True 12.5mg/L		97.6%	98.4%R	_ 44
CO 22.27 Calibration verification	J	12.3mg/L	12. Smyl		98.4xe	987%	Y*
				-			
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

* Rounding

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page: <u> ∖</u> _of <u> \ </u>
Reviewer:
2nd Reviewer: G

METHOD: Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

 $%R = \frac{Found}{True} \times 100$

Where,

Found =

concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation,

Found = SSR (spiked sample result) - SR (sample result).

True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

 $RPD = |S-D| \times 100$

Where,

S =

Original sample concentration

(S+D)/2

D =

Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	705	1018 mg/c	1000 mg/	102%R	102%R	5
MS 5:0+	Matrix spike sample	504	(SSR-SR)	62.5 mg/c	90 Y.R	90%R	J
DV	Duplicate sample	705	189 mg1	188 mgli	1%80	(%80	3

Comments:				
		•	 	

LDC #: 3650 VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page: _of _ Reviewer: ____ 2nd reviewer:

METHOD: Inorganics, Method Sec	nuer
Please see qualifications below for all question N N/A Have results been reported a Are results within the calibrate Are all detection limits below	ed range of the instruments?
Compound (analyte) results forrecalculated and verified using the following en	
Concentration = $W_{i} - W_{z}$	Recalculation: 77 4260g/100ml-77.36785/100ml=0.0532
W = 77.420 g (100ml W z = 77.3678 g x 00 ml	0.05320/100 ml x 10 (100ml) x 1000mg = 532 mg/

#	Sample ID	Analyte	Reported Concentration (\\chi_j)	Calculated Concentration (Y'G\'-	Acceptable (Y/N)
	2	TOS	670	670	\sim
	4)	683	683	
	5		532	532	
	9		1520	1520	
	8		188	188	
	9		313	373	
	10		318	318	
	11	1	102	102	7
	19	Soy	273	271	73*
	20		(36)	135	
	25		135	733>	
	22		68.5	68.7	
	23		24.0	23.8	
	24		61.00	61.3	
	52		61.2	60.8	
	260	4	1.7	1.9	4

Note:					
_	 				

The attached zipped file contains seven files:

<u>File</u>	<u>Format</u>	Description	
1) Readme_Monsanto_070716.doc	MS Word 2003	A "Readme"	file (this document).
	MS Excel 2003	SDG	LDC#
2) 10348344.xls		10348344	36509A
3) 10348356.xls		10348356	36509B
4) 10348364.xls		10348364	36509C
5) 10348833.xls		10348833	36509D
6) 10348839.xls		10348839	36509E
7) 10349184.xls		10349184	36509F

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.

LDC #: 36509

EDD POPULATION COMPLETENESS WORKSHEET

	Date	e: 7	/7	/16
	Page:_	1	of	1
2^{nd}	Reviewe	r: Z	4)	
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The LDC job number listed above was entered by <u>\(\frac{1}{2} \).</u>

	EDD Process		Comments/Action
1.	EDD Completeness		Comments/Action
la.	- All methods present?	<u>-</u> 4	
lb.	- All samples present/match report?	4	
Ic.	- All reported analytes present?	И	
ld.	(-10% or 100% verification of EDD?	У.	
26.39			
11.	EDD Preparation/Entry	_	
lla.	- Carryover U/J?	7	
IIb.	- Reason Codes used? If so, note which codes	7	client
IIc.	-Additional Information (QC Level, Validator, Date, Validated Y/N, etc.)	Ч	
Ш.	Reasonableness Checks	-	
Illa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	4	
ilib.	- Do all qualified detect results have detect qualifier (i.e. J)?	Ч	
illc.	- If reason codes used, do all qualified results have reason code field populated?	Ч	
IIId.	-Does the detect flag require changing for blank qualifiers? If so, are all U results marked ND?	سلر	
IIIe.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	Ч	
IIIf.	- Were any results rejected for overall assessment? If so, were results changed to nonreportable?	1	
IIIg.	- Is the readme complete? If applicable, were edits or discrepancies listed in the readme?	4	

Notes:			
	 	 	
		 	

2701 Lokel Ave. West, Suite 220, Calisbau, CA 92010 Bus. 700-027-1100 Fax. 700-027-1095

MWH Americas, Inc. 2890 East Cottonwood Parkway Suite 300 Salt Lake City, UT 84121 ATTN: Ms. Betty VanPelt November 17, 2016

SUBJECT: Monsanto, P4 Background, Data Validation

Dear Ms. VanPelt,

Enclosed is the final validation report for the fractions listed below. This SDG was received on October 27, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #37369:

SDG #	<u>Fraction</u>
10364242	Wet Chemistry, Metals by ICPMS SW-846 Method 6020A

The data verification was performed under Stage 2B & 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- QAPP Addendum, MWH 2009, to the project SAP, April, 2004
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

Chiotina Rink

Project Manager/Chemist

	443 pages-S	F EDD												Att	tach	men	it 1																				
	90/10 2B	3/4	LDC	#3	736	69 (MW	/H /	Am	erio	cas	, In	с	Salt	: La	ke	Cit	y, l	JT	/ N	lon	sar	nto,	, P4	Ba	ack	gro	un	d)								
LDC	SDG#	DATE REC'I		(60	Se 20A)	Ca,	,Se, Mg	S(30	O ₄ 0.0)	TI (254	OS 40C)																										
Mat	ix: Water/Soil	1	1									W	S	W	S	W	S	W	S	W	s	W	S	W	S	W	S	W	s	W	S	W	S	W	S	W	S
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Monsanto, P4 Production LLC

Report Date: November 16, 2016

Matrix: Water

Parameters: Metals by ICPMS SW-846 Method 6020A

Validation Level: Stage 2B & 4

Laboratory: Pace Analytical

Sample Delivery Group (SDG): 10364242

Sample Identification	Collection Date	Laboratory Sample Identification
1609SWMDS025-U**	09/27/16	10364242001**
1609SWMST044-U	09/27/16	10364242003
1609SWMST045-U	09/27/16	10364242005
1609SWMDS030-U	09/27/16	10364242007
NWPOND-U	09/27/16	10364242009
SEPOND-U	09/27/16	10364242011
1609SWMST069-U	09/27/16	10364242013
1609SWMST019-1-U	09/27/16	10364242015
1609SWMST019-2-U	09/27/16	10364242017
1609SWMST020-U	09/27/16	10364242019
1609SWMDS025-F**	09/27/16	10364242002**
1609SWMST044-F	09/27/16	10364242004
1609SWMST045-F	09/27/16	10364242006
1609SWMDS030-F	09/27/16	10364242008
NWPOND-F	09/27/16	10364242010
SEPOND-F	09/27/16	10364242012
1609SWMST069-F	09/27/16	10364242014
1609SWMST019-1-F	09/27/16	10364242016
1609SWMST019-2-F	09/27/16	10364242018
1609SWMST020-F	09/27/16	10364242020
1609SWMDS025-UMS	09/27/16	10364242001MS
1609SWMDS025-UMSD	09/27/16	10364242001MSD
1609SWMDS025-FMS	09/27/16	10364242002MS
1609SWMDS025-FMSD	09/27/16	10364242002MSD

^{**}Indicates sample underwent Stage 4 review.

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the EPA SW 846 Method noted below:

• Method 6020A ICPMS: Cadmium, Calcium, Magnesium, and Selenium.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements were met: 6 months for water and soil (note NIST soil standard reference samples are valid for up to 3 years).

All samples were received intact with proper preservation (pH < 2 for water).

II. ICP-MS Tune Analysis

ICP MS Tuning was performed by the laboratory. All isotopes in the tuning solution mass resolution were within 0.1 amu. Resolutions are < 0.9 amu full width at 10% peak height.

The percent relative standard deviations (%RSD) of all isotopes in the tuning solution were less than or equal to 5.0%.

III. Calibration

An initial calibration was performed each day of analysis. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

The low-level initial calibration verification (LLICV) and low-level continuing calibration verifications (LLCCVs) standard frequency and limits (70-130%) were met. Limit for maganese is 50 -150%. Only undetected data, or values < 2 x RL are qualified or impacted.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No metal contaminants were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

ICP interference check samples were reviewed for each analyte as applicable. Percent recovery (%R) of the ICSAB were within the QC limits of 80-120%.

VI. Laboratory Control Sample (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 80-120% limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VIII. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 75-125% and relative percent differences (RPD) were within 20% limits (35% soils).

IX. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria of ±10% difference for values greater than 50 times the lower limit of quantitation (i.e., the reporting limits [RLs]) were met with the following exception:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
1609SWMDS025-U**	Selenium	11.4 (≤10)	1609SWMDS025-U** 1609SWMST044-U 1609SWMST045-U 1609SWMDS030-U NWPOND-U SEPOND-U 1609SWMST069-U 1609SWMST019-1-U 1609SWMST019-2-U 1609SWMST020-U	J (all detects)	A

X. ICP-MS Internal Standards

All internal standard percent recoveries (%R) were within 70-130% or a 2x dilution was run with acceptable recoveries.

XI. Field Replicates

Field replicate samples were collected in duplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

XII. Sample Result Verification

All sample result verifications were acceptable for samples on which a Stage 4 review was performed. Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Dissolved Metals - Data Qualification Summary - SDG 10364242

Sample	Analyte	Flag	A or P	Reason (Code)
1609SWMDS025-U** 1609SWMST044-U 1609SWMST045-U 1609SWMDS030-U NWPOND-U SEPOND-U 1609SWMST069-U 1609SWMST019-1-U 1609SWMST019-2-U 1609SWMST020-U	Selenium	J (all detects)	Α	Serial dilution (%D) (18)

Dissolved Metals - Laboratory Blank Data Qualification Summary - SDG 10364242

No Sample Data Qualified in this SDG

Dissolved Metals - Field Blank Data Qualification Summary - SDG 10364242

No Sample Data Qualified in this SDG

LDC #:_	37369A4
	10364242
Laborato	ry: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

Stage 2B/4

METHOD: Metals (EPA SW 846 Method 6020A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments	
1.	Sample receipt/Technical holding times	A	9/27/16	
11.	ICP/MS Tune	A		
III.	Instrument Calibration	A		
IV.	ICP Interference Check Sample (ICS) Analysis	A		
V.	Laboratory Blanks	A		
VI.	Field Blanks	2		
VII.	Matrix Spike/Matrix Spike Duplicates	A	MSD= (21,22) (23,24); (23,24) = Ca, Mg7	4x
VIII.	Duplicate sample analysis	2		
IX.	Serial Dilution	SW	SER= (1) (11)	
X.	Laboratory control samples	A	us	
XI.	Field Duplicates	N	Not Evaluated	
XII.	Internal Standard (ICP-MS)	A		
XIII.	Sample Result Verification	A	Not reviewed for Stage 2B validation.	
Lxiv	Overall Assessment of Data	L A		

Note:

A = Acceptable

ND = No compounds detected

D = Duplicate

SB=Source blank

N = Not provided/applicable SW = See worksheet R = Rinsate FB = Field blank TB = Trip blank EB = Equipment blank OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID		Lab ID	Matrix	Date
1	1609SWMDS025-U**	Se	10364242001**	Water	09/27/16
<u>:</u>	1609SWMST044-U		10364242003	Water	09/27/16
	1609SWMST045-U		10364242005	Water	09/27/16
	1609SWMDS030-U		10364242007	Water	09/27/16
	NWPOND-U		10364242009	Water	09/27/16
	SEPOND-U		10364242011	Water	09/27/16
	1609SWMST069-U		10364242013	Water	09/27/16
	1609SWMST019-1-U		10364242015	Water	09/27/16
	1609SWMST019-2-U		10364242017	Water	09/27/16
0	1609SWMST020-U	1	10364242019	Water	09/27/16
1	1609SWMDS025-F**	Cd. Ca, Ma Se	10364242002**	Water	09/27/16
2	1609SWMST044-F		10364242004	Water	09/27/16
3	1609SWMST045-F		10364242006	Water	09/27/16
ļ	1609SWMDS030-F		10364242008	Water	09/27/16
5	NWPOND-F	*	10364242010	Water	09/27/16

LDC #: 37369A4a SDG #: 10364242

VALIDATION COMPLETENESS WORKSHEET

Stage 2B/4

Laboratory: Pace Analytical

METHOD: Metals (EPA SW 846 Method 6020A)

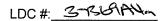
	Client ID		Lab ID	Matrix	Date
16	SEPOND-F	Cd, Ca, Ma, Se	10364242012	Water	09/27/16
17	1609SWMST069-F		10364242014	Water	09/27/16
18	1609SWMST019-1-F		10364242016	Water	09/27/16
19	1609SWMST019-2-F		10364242018	Water	09/27/16
20	1609SWMST020-F		10364242020	Water	09/27/16
21	1609SWMDS025-UMS	<u>Se</u>	10364242001MS	Water	09/27/16
22	1609SWMDS025-UMSD	4	10364242001MSD	Water	09/27/16
23	1609SWMDS025-FMS	Cà, Ca, Ma, Se	10364242002MS	Water	09/27/16
24	1609SWMDS025-FMSD		10364242002MSD	Water	09/27/16
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26					
27					
28					
29					

VALIDATION FINDINGS CHECKLIST

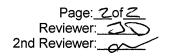
Page: \of \(\frac{7}{2} \)
Reviewer: \(\frac{5}{2} \)
2nd Reviewer: \(\frac{7}{2} \)

Method: Metals (EPA SW 846 Method 6010B/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments				
I. Technical holding times								
All technical holding times were met.	_							
Cooler temperature criteria was met.								
II. ICP/MS Tune								
Were all isotopes in the tuning solution mass resolution within 0.1 amu?								
Were %RSD of isotopes in the tuning solution ≤5%?	_							
III. Calibration								
Were all instruments calibrated daily, each set-up time?	/							
Were the proper number of standards used?								
Were all initial and continuing calibration verification %Rs within the 90-110% (80- 120% for mercury) QC limits?	/							
Were all initial calibration correlation coefficients ≥ 0.995?	/							
IV. Blanks								
Was a method blank associated with every sample in this SDG?	/							
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/						
V. ICP Interference Check Sample								
Were ICP interference check samples performed daily?	_							
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	/							
VI. Matrix spike/Matrix spike duplicates								
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	/							
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	/							
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were \leq 5X the RL, including when only one of the duplicate sample values were \leq 5X the RL.	/							
VII. Laboratory control samples			,					
Was an LCS anaylzed for this SDG?								
Was an LCS analyzed per extraction batch?	_							
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	/							



VALIDATION FINDINGS CHECKLIST



Validation Area	Yes	No	NA	Findings/Comments
VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	/			
If the %Rs were outside the criteria, was a reanalysis performed?				
IX. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?	_			
Were all percent differences (%Ds) < 10%?		_		
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.		_		
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	/			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.			/	
Target analytes were detected in the field duplicates.			/	
XIII. Field blanks				
Field blanks were identified in this SDG.			/	
Target analytes were detected in the field blanks.				

LDC#: 37369A49

VALIDATION FINDINGS WORKSHEET Sample Specific Element Reference

Page: of Reviewer: 2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-10	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K(Se) Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
11-20	W	Al, Sb, As, Ba, Be (Cd) (Ca) Cr, Co, Cu, Fe, Pb (Mg), Mn, Hg, Ni, K, Se) Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QC.21-22	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
QU.23-24	W	Al, Sb, As, Ba, Be, Cd, Ca) Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,
GFAA		Al, Sh, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Ph, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments: Mercury by CVAA if performed

LDC #: 37369A4a

VALIDATION FINDINGS WORKSHEET ICP Serial Dilution

Page: <u> </u> of <u> </u>
Reviewer:_SO_
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010C/6020A/7471B)

Г		aa awalifiaatiana	halaur fan all .	questions answered '	114 111 411			: -! !: £:!	. 11 & 1 / A 11
r	プロスト く	ee onamications	Deiow ior all (nnesuons answeren	IN INOT	applicable c	illestions are	inentitien as	· · · NI / A · ·
и,	/19 4 00 0	ce qualifications	DOION TOT ALL	questions unonered	14 . 1400	applicable c	acciding aic	iucilliicu as	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

If analyte concentrations were > 50X the MDL (ICP) ,or >100X the MDL (ICP/MS), was a serial dilution analyzed?

Y/N/N/A Were ICP serial dilution percent differences (%D) <10%?

YNN/A Is there evidence of negative interference? If yes, professional judgement will be used to qualify the data.

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Diluted Sample ID	Matrix	Analyte	%D (Limits)	Associated Samples	Qualifications
	1	W	Se	11.4	1-10	J/UJ/A (det) (\&)
П						
\Vdash						<u> </u>
\Vdash						
H			<u> </u>			
╟┤						
H						<u> </u>
		 				
H						
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Comments:			

VALIDATION FINDINGS WORKSHEET Initial and Continuing Calibration Calculation Verification

Page:_	<u>\</u> of \
Reviewer:	20
2nd Reviewer:	a

METHOD: Trace Metals (See cover)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = <u>Found</u> x 100

Where, Found = concentration (in ug/L) of each analyte <u>measured</u> in the analysis of the ICV or CCV solution True = concentration (in ug/L) of each analyte in the ICV or CCV source

True

					Recalculated	Reported	
Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	%R	%R	Acceptable (Y/N)
	ICP (Initial calibration)						
501 6:51	ICP/MS (Initial calibration)	Se	77.48úgl	80 yalı	969 %R	96.8%R	N×
	CVAA (Initial calibration)		J)			
	ICP (Continuing calibration)						
CCV	ICP/MS (Continuing calibration)	Ca	77.070g/	800g/L	963%R	9634.8	7
	CVAA (Contining calibration)		,				
	GFAA (Initial calibration)						
	GFAA (Continuing calibation)						

Comments:	* Porunding	

LDC#: 373491740

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

	Page:_	<u>\</u> of_
	Reviewer:	OB
2nd	Reviewer:	Ci

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix s	ix spike sample were recalculated using the following formu	ıla:
--	---	------

 $%R = \frac{Found}{True} \times 100$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation,

Found =

Found = SSR (spiked sample result) - SR (sample result).

True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

 $RPD = \underline{|S-D|} \times 100$

Where, S = Original sample concentration

(S+D)/2 D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

 $%D = II-SDRI \times 100$

Where, I = Initial Sample Result (mg/L)

SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICS AB	ICP interference check	Sa	Nov84.2P	100 vg/c	957%R	95.7%R	7
15:47	Laboratory control sample	Ca	2047 ugil	2000 val	1027.8	102%R	
MS 19215	Matrix spike	Se	(SSR-SR) 108.4 US/	100 4	1087.8	(08%R	
MSD 15:22	Duplicate	<u>C</u>	100.1 41	99.5 ugic	(% 880	0%-680	Y*
SEP	ICP serial dilution	Se	98.00 ugl	87.96 ugl	ニュッシ	ハントラ	5)

Comments:	*Rondon		·

LDC #: 37369174

M N N/A

Ý N N/A Y/ N N/A

VALIDATION FINDINGS WORKSHEET <u>Sample Calculation Verification</u>

Are results within the calibrated range of the instruments and within the linear range of the ICP?

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Page:_	<u>_i_</u> of <u>\</u>
Reviewer:_	30
2nd reviewer:_	

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Are all detection limits below the CRDL?

Have results been reported and calculated correctly?

Detecto equation	ed analyte results for _ on:	(1) &	were recalcu	lated and verified u	ising the following
Concent RD FV In. Vol. Dil	ration = \frac{(RD)(FV)(Dil)}{(In. Vol.)} = Raw data conce = Final volume (m = Initial volume (m = Dilution factor	ıl)	on: Ougl		
#	Sample ID	Analyte	Reported Concentration ((公)し)	Calculated Concentration (∪a(∟)	Acceptable (Y/N)
	Ì	Se	0.88	0.38	V
	()	Ca	306800	306000	7
Note:					

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Monsanto, P4 Production LLC

Report Date:

November 15, 2016

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2B & 4

Laboratory:

Pace Analytical

Sample Delivery Group (SDG): 10364242

Sample Identification	Collection Date	Laboratory Sample Identification
1609SWMDS025-U**	09/27/16	10364242001**
1609SWMST044-U	09/27/16	10364242003
1609SWMST045-U	09/27/16	10364242005
1609SWMDS030-U	09/27/16	10364242007
NWPOND-U	09/27/16	10364242009
SEPOND-U	09/27/16	10364242011
1609SWMST069-U	09/27/16	10364242013
1609SWMST019-1-U	09/27/16	10364242015
1609SWMST019-2-U	09/27/16	10364242017
1609SWMST020-U	09/27/16	10364242019
1609SWMDS025-F**	09/27/16	10364242002**
1609SWMST044-F	09/27/16	10364242004
1609SWMST045-F	09/27/16	10364242006
1609SWMDS030-F	09/27/16	10364242008
NWPOND-F	09/27/16	10364242010
SEPOND-F	09/27/16	10364242012
1609SWMST069-F	09/27/16	10364242014
1609SWMST019-1-F	09/27/16	10364242016
1609SWMST019-2-F	09/27/16	10364242018
1609SWMST020-F	09/27/16	10364242020
1609SWMDS025-FMS	09/27/16	10364242002MS
1609SWMDS025-FMSD	09/27/16	10364242002MSD
1609SWMST044-UDUP	09/27/16	10364242003DUP
1609SWMST045-UDUP	09/27/16	10364242005DUP

^{**}Indicates sample underwent Stage 4 review.

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analysis was performed per the method noted below:

EPA Method 300.0 for Sulfate and EPA Method 160.1 for Total Dissolved Solids.

This review follows the specific guidance in the QAPP Addendum (MWH 2009) to the project SAP (April, 2004) using the intent of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as applicable to the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were reviewed for a minimum of 10% of the Sample Delivery Groups (SDGs) or laboratory data package deliverables associated with this sampling event as specified in the QAPP Addendum. This package includes raw data review.

The following are definitions of the data qualifiers:

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximated concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- R The result is unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following are not data qualifiers but are provided for the purpose of evaluating the laboratory's performance:

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

The following "Reason Codes" will be applied as applicable to the validated data:

- 1 Holding Time
- 2 Sample Preservation (including receipt temperature)
- 3 Sample Custody
- 4 Missing Deliverable
- 5 ICPMS Tune
- 6 Initial Calibration
- 7 Initial Calibration Verification
- 8 Continuing Calibration Verification
- 9 Low-Level Calibration Check Sample
- 10 Calibration Blank
- 11 Laboratory or Preparation Blank
- 12 ICPMS or ICP Interference Check Standard
- 13 Laboratory Control Sample or Laboratory Control Sample Duplicate Recovery
- 14 Laboratory Control Sample Precision
- 15 Laboratory Duplicate Precision
- 16 Matrix Spike or Matrix Spike Duplicate Recovery
- 17 Matrix Spike/Matrix Spike Duplicate Precision
- 18 ICPMS or ICP Serial Dilution
- 19 ICPMS Internal Standard
- 20 Field Replicate Precision
- 21 Equipment Rinsate Blank
- 22 Linear Range Exceeded
- 23 Other reason
- 26 Source Water Blank

I(a). Deliverables and Chain-of-Custody Documentation

All deliverables were present and complete including the Case Narrative with full explanation of corrective actions and all package deliverables defined in the project SAP.

The chain-of-custodies were complete for sample identification, matrix, methods, preservation, dates and times of collection, dates and times of relinquishment and receipt. Any corrections performed properly (i.e., crossed-out with a single line; correction visible, neat, and clear; and with initials of individual making correction).

I(b). Preservation and Holding Times

All technical holding time requirements (28 days for method 300.0 and 7 days for method 2540C) were met.

All samples were received intact (preserved as required according to each method).

II. Calibration

An initial calibration was performed each day of analysis. The blank plus 6 standard curve produced a coefficient of determination (r^2) of > 0.990. The frequency and analysis criteria (90-110%) of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Laboratory Control Sample (LCS)

Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within the QC limits of 80-120% and relative percent differences (RPD) were within 20% limits.

V. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPDs) were within the acceptance criteria of \leq 20% for water or \leq 35% for soil. For low level results, <5 x RL, a difference of \pm 1 x RL is allowed for water and \pm 2 x RL for soils.

VI. Spike Sample Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Spike amounts were reviewed and concentrations are noted to be at or near the mid-point of the calibration. Percent recoveries (%R) were within 90-110% (80-120% TDS) and relative percent differences (RPD) were within 20% limits (35% soils).

VII. Field Replicates

Field replicate samples were collected in duplicate. Control limit(s) were not established in the SAP since the average of the replicate samples is used as the final value for the field location. Results of field replicate samples or other project samples were not qualified based on the precision of field replicate samples.

VIII(a). Sample Result Verification

All sample result verifications were acceptable for samples on which a Stage 4 review was performed. Raw data were not evaluated for the samples reviewed by Stage 2B criteria.

VIII(b). Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

Wet Chemistry - Data Qualification Summary - SDG 10364242

No Sample Data Qualified in this SDG

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 10364242

No Sample Data Qualified in this SDG

Wet Chemistry - Field Blank Data Qualification Summary - SDG 10364242

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 37369A6 SDG #: 10364242

Stage 2B/4

Date: <u>≀เ\⊲โเ∽</u>
Page: <u></u> of <u></u> 2_
Reviewer:
2nd Reviewer:

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	9127/10
Ш	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	<i>₽</i>	
VI.	Matrix Spike/Matrix Spike Duplicates	A	MSD = (21.22)
VII.	Duplicate sample analysis	A	9D
VIII.	Laboratory control samples	A	ics
IX.	Field duplicates	2	Not evaluated
X.	Sample result verification	A	Not reviewed for Stage 2B validation
ΧI	Overall assessment of data	l A	

Note:

A = Acceptable N = Not provided/applicable

SW = See worksheet

Laboratory: Pace Analytical

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate TB = Trip blank EB = Equipment blank SB=Source blank

OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	1609SWMDS025-U**	10364242001**	Water	09/27/16
2	1609SWMST044-U	10364242003	Water	09/27/16
3	1609SWMST045-U	10364242005	Water	09/27/16
4	1609SWMDS030-U	10364242007	Water	09/27/16
5	NWPOND-U	10364242009	Water	09/27/16
6	SEPOND-U	10364242011	Water	09/27/16
7	1609SWMST069-U	10364242013	Water	09/27/16
8	1609SWMST019-1-U	10364242015	Water	09/27/16
9	1609SWMST019-2-U	10364242017	Water	09/27/16
10	1609SWMST020-U	10364242019	Water	09/27/16
11	1609SWMDS025-F** &D-4	10364242002**	Water	09/27/16
12	1609SWMST044-F	10364242004	Water	09/27/16
13	1609SWMST045-F	10364242006	Water	09/27/16
14	1609SWMDS030-F	10364242008	Water	09/27/16
15	NWPOND-F	10364242010	Water	09/27/16
16	SEPOND-F	10364242012	Water	09/27/16
17	1609SWMST069-F	10364242014	Water	09/27/16

LDC #: 37369A6 SDG #: 10364242

Laboratory: Pace Analytical

VALIDATION COMPLETENESS WORKSHEET

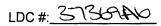
Stage 2B/4

2nd Reviewer:

METHOD: (Analyte) Sulfate (EPA Method 300.0), TDS (EPA Method 160.1)

	Client ID		Lab ID	Matrix	Date
18	1609SWMST019-1-F	Svy	10364242016	Water	09/27/16
19	1609SWMST019-2-F		10364242018	Water	09/27/16
20	1609SWMST020-F		10364242020	Water	09/27/16
21	1609SWMDS025-FMS		10364242002MS	Water	09/27/16
22	1609SWMDS025-FMSD	1	10364242002MSD	Water	09/27/16
23	1609SWMST044-UDUP	705	10364242003DUP	Water	09/27/16
24	1609SWMST045-UDUP	7	10364242005DUP	Water	09/27/16
25					
26					
27					
28					
29					
lote	S:				

Notes:	 		 	

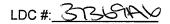


VALIDATION FINDINGS CHECKLIST

Page: _\ of _\
Reviewer: _\
2nd Reviewer: _\

Method:Inorganics (EPA Method See Cost)

The control of the co				_
Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	1			
Cooler temperature criteria was met.				
II. Calibration				
Were all instruments calibrated daily, each set-up time?	/			
Were the proper number of standards used?	1			
Were all initial calibration correlation coefficients > 0.995?	/			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	/			
Were titrant checks performed as required? (Level IV only)			_	
Were balance checks performed as required? (Level IV only)	1			
III. Blanks				
Was a method blank associated with every sample in this SDG?				
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	/			
Were the MS/MSD or duplicate relative percent differences (RPD) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.	/	;		
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?				
Was an LCS analyzed per extraction batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	/			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?				
Were the performance evaluation (PE) samples within the acceptance limits?				



VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: 2
2nd Reviewer: 2

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	1			
Were detection limits < RL?	_			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	/			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.			/	
Target analytes were detected in the field duplicates.			/	
X. Field blanks				
Field blanks were identified in this SDG.		/		
Target analytes were detected in the field blanks.			/	

LDC#:37369AV

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: JD
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
	pH (TDS) CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
1- 20	ph TDS CI F NO ₃ NO ₂ SO ₂ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
y	ph TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
acur	PH TDS CLF NO3 NO2 SO) O-PO4 AIK CN NH3 TKN TOC Cr6+ CIO4
	PH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
QC23-24	pH (TDS)CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO3 NO2 SO4 O-PO4 AIK CN NH3 TKN TOC Cr6+ ClO4
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ AIK CN NH ₃ TKN TOC Cr6+ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CLF NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ O-PO ₄ Alk CN NH ₃ TKN TOC Cr6+ ClO ₄
	pH_TDS_CL_F_NO ₂ _NO ₂ _SO ₄ _O-PO ₄ _Alk_CN_NH ₂ _TKN_TOC_Cr6+_ClO ₄

Comments:	
The state of the s	

LDC #: 37351460

True

Validation Findings Worksheet Initial and Continuing Calibration Calculation Verification

Page: ___ of ___ Reviewer: __ SS___ 2nd Reviewer: __ S___

Method: Inorganics, Method	See Con	
The correlation coefficient (r) for the o	calibration of <u></u>	was recalculated.Calibration date: Salalio
An initial or continuing calibration ver	rification percent rec	overy (%R) was recalculated for each type of analysis using the following formula:
%R = <u>Found X 100</u>	Where,	Found = concentration of each analyte <u>measured</u> in the analysis of the ICV or CCV solution

True = concentration of each analyte in the ICV or CCV source

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (mg/l)	Area	r orr²	r or r ²	(Y/N)
Initial Calibration		s1	1	0.125			
Verification		s2_	2	0.278	0.999963	0.999945	
	0.0	s3	5	0.847			V*
	FUE PUE	s4	25	5.041			\mathcal{J}
	,	s5	50	10.335			
		s6	100	20.545			
Calibration verification		Found 12.17mg/	12-Small	·	97.49/8	98.2%R	Y*
CCU (8).7Z Calibration verification		12.5/mg/c	12-Sngic		100.001/8	101.0%R	7*
Calibration verification		3					

Comments: Refer to Calibration Veri	fication findings worksheet fo	r list of qualifications and associated	d samples when reported resul	ts do not agree within
10.0% of the recalculated results.	* Rouding			
_	<u> </u>			

LDC#: 37349A6

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page:_	<u> </u>
Reviewer:	30
2nd Reviewer:	a

METHOD: Inorganics, Method			\circ	/ >
	METHOD: Inorganics,	Method	200	Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

 $%R = Found \times 100$

Where,

Found =

concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation,

True Found = SSR (spiked sample result) - SR (sample result).

True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

 $RPD = |S-D| \times 100$

Where,

S =

Original sample concentration

(S+D)/2

2

D =

Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample						
		705	48 tings	500mg/	97%2	97%	
MS	Matrix spike sample		(SSR-SR)				4×
20:50		SOY	zzlugic	ZDongle	88°1.e	897.E	3
DUP	Duplicate sample	TOS	~		no/085	6 2/000	4
21718			954mg/c	956mgl	07.Kg	0880	

Comments: _	Thound my		

LDC#:37369AX

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:_	<u></u> of
Reviewer:	QC
2nd reviewer:	1~
-	7

METHOD: Inorg	ganics, Method Sec	we(
N N/A N N/A Y N N/A	Have results been reported an Are results within the calibrate Are all detection limits below the	I range of the instruments?
	alyte) results ford d verified using the following eq	reported with a positive detect were uation:
Concentration = \),- Wz	Recalculation: 75,5279 g125ml -75 49,89125ml = 0.0361g/2
W,=73 Wz=7	5.5279 g/25ml	0.036/g/25ml x(40)(25ml 1000mg = 1440 100mg = 1440

#	Sample ID	Analyte	Reported Concentration	Calculated Concentration	Acceptable (Y/N)
	l	705	1440	1443	, Y
	()	504	744	735	7/4
-					
					<u> </u>
					-

Note:	* Roudines		

The attached zipped file contains two files:

<u>File</u>	<u>Format</u>	<u>Description</u>		
1) Readme_Monsanto_111716.doc	MS Word	A "Readme" file (this document).		
	MS Excel	SDG	LDC#	
2) 10364242.xls		10364242	37369A	

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.